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[OFFICIAL NOTICE.]

### Pacific Coast Gas Association, Second Annual Meeting.

OFFICE OF THE SECRETARY, OAKLAND, CAL., March 5, 1894.

Upon the suggestion of Mr. Jos. B. Crockett, our President, and with the concurrence of the Directory, it has been decided to hold the next meeting of this Association at Sacramento, on Tuesday and Wednesday, the 15th and 16th of May, 1894.

This has been done to afford an opportunity to members to combine the business of our annual conclave with the pleasure of a visit to the Midwinter Fair, as the time appointed by the by-laws would be after the Fair had closed, and many if not all of the members who live at a distance from San Francisco will thereby be saved the necessity of making two trips to the bay.

Our first meeting was a complete success—the second will not be behind it in interest. Already papers are promised upon topics of interest to gas men, among them being "Practical Analysis of Gas," illustrated with complete apparatus, "Proper Books of Record for Gas Companies," and "Prepayment Meters."

Each member's presence is necessary to the preservation of an organization whose ultimate object is the bringing together in unity of thought and action the gas fraternity. Come prepared to ask questions, to give and receive information. The good accomplished by the last meeting has been felt throughout the year in better results of manufacture and distribution. The pertinent question personally asked and answered is productive of more results than volumes of print.

In order that arrangements may be made for your care and comfort while at Sacramento, please advise me on receipt of this if you intend to be present. You will be later advised concerning headquarters, place of meeting, hotel accommodations, etc.

We want at this meeting a perfect circulation of members, and no dead ends. Yours very truly, JOHN A. BRITTON, Secretary.

## BRIEFLY TOLD.

SECOND CLASS POSTAGE RATES FOR THE PUBLICATIONS OF ENGINEERING SOCIETIES.—Elsewhere we publish a circular-letter from Mr. A. B. Slater, Jr., Secretary of the American Gas Light Association, which has been mailed by him to at least every member of the American Association, in which he urges the members to bring pressure on the Senators and Representatives in Congress of their various districts to cause the postal laws to be so changed as to admit to the mails as second class matter all publications regularly issued by scientific or engineering societies. Presuming that the American Association has need of a gazette for placing before its membership its proceedings, no objection can be urged to the transmission of that gazette through the mails at the very lowest possible rate of postage, and we are sure that if the members attack their Congressmen as to the proposition in a zealous way, the Congressmen can easily be made to see that their interests will in no sense suffer, since the gas man is usually an important factor in his community. In the abstract, no objection can be offered to the proposition, and its practical effect will be to save money for the Association's treasury.

THE WESTERN MEETING.—The convention at Columbus of the Ohio Association very plainly foretold that the meeting of the Western Association, at Cleveland next May, is to be a rousing good one. The Committee of Arrangements, which was well represented at the Columbus gathering, had several informal conversations as to what should be done for the entertainment of the Western's members and guests, and we are quite within bounds in saying that Cleveland is prepared to receive them most hospitably. It has been decided that a feature of the entertainment will be a banquet, and other schemes for the delectation of the gentler sex are also being studied out. As headquarters, the Hollenden cannot be excelled, and as those who elect to make it also their abiding place can be accommodated on either the American or European plans, there should be no difficulty on the score of opportunity for being suited. The exhibition of gas appliances, which is to be kept up during the meeting, really bids fair to exceed anything of the kind ever held in this country. The exhibition room selected is the handsome and commodious local meeting place known as Army and Navy Hall, and it is right at the doors of the Hollenden. A score of apparatus manufacturers—notably the gas stove makers—have applied for space, and we understand that Chairman Greenough, of the Committee of Arrangements, has deputed to Mr. Hyde the task of making allotments of space to those desirous of exhibiting their specialties. We have also word from President Jenkins and Secretary Littleton that the literary programme will be up to standard in respect of both quality and quantity. The membership of the Committee of Arrangements is: M. S. Greenough (Chairman), C. M. Higgins, D. R. Warmington, C. R. Faben, Jr., Irvin Butterworth and Jos. R. Light, who, it may be remarked, are all Buckeye men—even including Mr. Higgins, who has a very warm niche in his affections for the capital seat of Cuyahoga county.

ANOTHER DOLLAR GAS ANNOUNCEMENT.—The frequent additions to the roster of places where gas is sold at $1 per 1,000 has robbed the cry of "dollar gas" of much of its charm, for the novelty of the thing is now pretty well dulled. The latest Company to accept the rate is Springfield, Ills., the proprietors of which have virtually agreed to sell gas at $1 per 1,000 net to all the consumers, provided the City Council will give them a contract to maintain that rate for a period of five years. As the Mayor of the city was present at the conference at which the price was named, there seems to be no reason, in that he acquiesced *ex officio* in the determination reached, to doubt that the thing is as good as settled. At first blush it would seem hard to reconcile this rate with the population of Springfield taken due note of, as one that would bring a profit to the Gas Company; but perhaps the explanation thereof lies in the fact that the Messrs. Ridgely, besides causing the operation of the works to be conducted in a conservative, though not illiberal way, have managed to keep the capital account at the lowest possible notch, for we submit that a capital load of $75,000 is very light for a corporation that enjoys the business possessed by the Springfield Company. We venture to say that Superintendent Odiorne, even with all his practical leanings toward selling gas cheaply, did not believe—say, in 1889—that five years thereafter Springfield would have $1 gas, yet here it is. We hope that the Springfield Company's proprietors have not set themselves too hard a task, and we repeat that they could not have faced it at all were it not for the low capital account, which cannot be taken in any sense, we imagine, to stand for the real value of the property it purports to represent.

NOTES.—At the annual meeting of the Central Gas Light Company, of San Francisco, the following officers were chosen: President, Henry J. Crocker; Vice-President, Thomas Mootry, Jr.; Treasurer, L. Lambertan; Secretary, Maurice Casey. The Central Company's works are operated under leasehold by the Pacific Gas Improvement Company.——On April 9th an application will be made to the Common Pleas Court of Philadelphia, for a charter for the National Heat and Power Construction Company, which proposes to manufacture and construct gas works, gas generating machines, and appliances pertaining thereto. The incorporators are General D. H. Hastings, ex-Governor Jas. A. Beaver, and Messrs. John W. Woodside, L. G. McCauley, J. B. Gray, Jas. L. Hastings, John I. Rogers and John B. Henkels.——Some days ago Mr. Heard, Chairman of the Congressional Committee of the District of Columbia, reported favorably to the House the bill reducing the price of gas to $1 per 1,000 cubic feet, which was under consideration by a subcommittee for several weeks.——We are in receipt of a copy of No. 111 of "Van Nostrand's Science Series," which is a second edition of "Gas Lighting and Gas Fitting," by Wm. Paul Gerhard, C.E. The book, which is a handy pocket edition, is a notable improvement on the first edition, the author having added much new matter. The publishers ask 50 cents for it, and it is well worth the money.

[OFFICIAL REPORT—REVISED BY THE SECRETARY.]

## TENTH ANNUAL MEETING OF THE OHIO GAS LIGHT ASSOCIATION.

HELD AT COLUMBUS, O., MARCH 21 AND 22, 1894.

FIRST DAY—WEDNESDAY, MARCH 21—MORNING SESSION.

### ROLL CALL.

The following members were in attendance:

Greenough, M. S., Cleveland, O.
Allen, G. A., Zanesville, O.
Anson, W. H., Columbus, O.
Bates, T. A., Lima, O.
Bissell, W. G., Chicago, Ills.
Booth, M., Bellaire, O.
Boyle, W. C., Salem, O.
Butterworth, I., Columbus, O.
Cantine, W. W., Alliance, O.
Clark, G. M., Chicago, Ills.
Clark, J. J., London, O.
Cline, J. W. P., Springfield, O.
Coombs, Jr., M., Youngstown, O.
Crisp, G. E., Elyria, O.
Dell, J., St. Louis, Mo.
Dickey, P. S., Chicago, Ills.
Dittmar, R. A., Troy, O.
Dundon, E. M., Columbus, O.
Faben, Jr., C. R., Toledo, O.
Faux, J. A., Pittsburgh, Pa.
Felt, H. C., Cincinnati, O.
Gemuender, M. A., Columbus, O.
Gribbel, W. S., New York City.
Guldlin, O. N., Fort Wayne, Ind.
Gwynn, J. W., Bucyrus, O.
Gwynn, J., Steubenville, O.
Harper, H. D., Chicago, Ills.
Harris, J. A., Philadelphia, Pa.
Hayward, S. F., New York City.
Hedges, W. C., Mansfield, O.
Higgins, C. M., New York City.
Jones, T. C., Delaware, O.
Lathrop, A. P., Columbus, O.
Light, J., Dayton, O.
McCall, H., Tiffin, O.
McCook, G. W., Steubenville, O.
McCormack, E. T., London, O.
McDonald, D., Louisville, Ky.
McIlhenny, J. D., Phila., Pa.
McLain, C. M., Massillon, O.
McVitty, M. C., Kenton, O.
Maguire, A. B., Urbana, O.
Matt, G., Lancaster, O.
Miller, A. S., Chicago, Ills.
Nash, A. F., Windsor, Ont.
Osius, G., Detroit, Mich.
Penn, J., Washington C't House, O.
Persons, F. R., New York City.
Philipp, E. B., Hamilton, O.
Powell, J. H., Upper Sandusky, O.
Prichard, W. W., Portsmouth, O.
Printz, E., Zanesville, O.
Roper, G. D., Rockford, Ills.
Russell, D. R., St. Louis, Mo.
Salter, J., Covington, Ky.
Seamon, J. F., Uniontown, Pa.
Sheets, E. D., Cleveland, O.
Shelton, F. H., Philadelphia, Pa.
Smith, J. H., Newark, O.
Smyers, W., Hamilton, O.
Stacey, F. A., Chillicothe, O.
Stephens, J. G., Pittsburgh, Pa.
Stratton, S. S., Chicago, Ills.
Strong, L. A., Mansfield, O.
Tayler, G. H., Warren, O.
Timmons, H. D., Barnesville, O.
Van Wie, E. G., Chicago, Ills.
Welch, C. H., Athens, O.
Wickham, L., St. Louis, Mo.
Wilkiemeyer, H., Evansville, Ind.
Wones, W. R., Springfield, O.

### BEGINNING THE PROCEEDINGS.

The convention was called to order by the President, who said: The Constitution provides that the reading of the minutes will be dispensed with unless called for. They were published in a number of gas journals, and the custom has been to dispense with the reading, and unless some member calls for the reading it will be dispensed with on this occasion as usual. We are fortunate and happy in having with us this morning, in attendance upon our meeting, some visitors from a distance—Mr. D. J. Collins, formerly with the Omaha Gas Company; Mr. W. R. Addicks, of the Boston Gas Company; Mr. James Somerville, of the Indianapolis Gas Company; and Mr. Chollar, of the St. Louis Gas Company. We welcome these gentlemen to our meeting this morning, and hope they will take an active part in the proceedings and discussion of the papers and questions. Later on you will have the pleasure, no doubt, of hearing from them individually. The next thing in order will be the reading of the report of the Executive Committee.

Thereupon the Secretary read the following report:

### REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee has appointed the following Committee on Nominations: C. R. Faben, Jr., Jerome Penn, Eugene Printz, and make the following recommendations:

1st. That Mr. A. C. Humphreys be elected to Honorary Membership.

2d. That the following gentlemen be elected to active membership:

Donald McDonald, Albany, N. Y.
Howard Jones, Circleville, O.
John Stout, Chicago, Ills.
Walter R. Addicks, Boston, Mass.
Robert Watt, Chicago, Ills.
John H. Kauke, Wooster, O.
Frank J. Ort, Ironton, O.
J. E. Stacey, Cincinnati, O.
J. R. Kendall, Terre Haute, Ind.
David Buel, Columbus, O.
B. P. Holmes, Youngstown, O.
G. A. Rumsey, Pineville, Ky.

3d. That the following members be released from membership, as per their written request:

Murray McMillin, Marietta, O. D. M. Clark, Detroit, Mich.
A. W. Prout, Sandusky, O. M. A. Gemuender, Columbus, O.
H. C. Thompson, Spokane Falls, Wash.

4th. That the following members be dropped from membership on account of non payment of dues:

G. S. Fowler, Lima, O. F. E. McGervey, Xenia, O.
Richard Lee, Cincinnati, O. John McKay, Titusville, Pa.

5th. That the offer of the AMERICAN GAS LIGHT JOURNAL to furnish each member of the Association with a copy of the proceedings of the meeting be accepted.

The President—The custom of our Association has been to adopt the report of the Executive Committee as a whole, and I will entertain a motion to that effect now, if it is made, and if seconded there will be an opportunity to discuss any of the recommendations and ask any questions with reference to it. What is your pleasure?

Mr. Penn—I move that the report be adopted as a whole.

The President—Are there any remarks or questions on any of these recommendations? The Nominating Committee is appointed by the Executive Committee to nominate one set of officers for the ensuing year, and two members of the Executive Committee to succeed those whose terms expire with this meeting. If there are no questions to be asked, and no other discussion, all who are in favor of the adoption of the report will signify by saying aye. [The motion unanimously prevailed.] If there are any persons who desire to unite with the Association the Secretary will present them with blank forms of application, and all applications can be handed to the Secretary at any time to-day or to-morrow.

The Secretary then read the report of the Secretary and Treasurer, as follows:

ANNUAL REPORT OF THE SECRETARY AND TREASURER OF THE OHIO GAS LIGHT ASSOCIATION.

| | |
|---|---|
| New members admitted last meeting | 13 |
| Released from membership last meeting | 7 |
| Elected from active to honorary membership | 1 |
| Present number of active members | 161 |
| Badges on hand | 25 |

*Financial Report.*

| | | |
|---|---|---|
| Receipts— | | |
| From initiation and dues | $390 00 | |
| " sale of badges | 15 00 | |
| " certificate of deposit | 340 00 | |
| " interest | 23 73 | |
| " gas journals for proceedings of last meeting | 125 80 | |
| " Irvin Butterworth, Ex-Treasurer | 155 92 | |
| | | $1,050 45 |
| Expenditures— | | |
| For stationery and printing | $123 27 | |
| " postage | 20 03 | |
| " expressage | 3 90 | |
| " telegrams | 3 94 | |
| " Executive Committee | 3 45 | |
| " salary of Secretary | 300 00 | |
| " reporting Ninth Annual meeting | 125 80 | |
| Balance on hand | 460 66 | |
| | | $1,050 45 |

Respectfully submitted, A. P. LATHROP, Sec. & Treas.
Approved, C. H. WELCH, Chairman of Finance Committee.

On motion of Mr. Gwynn the reports of the Secretary and Treasurer and Finance Committee were accepted and placed on file.

The Secretary—Messages have been received from the following: Charles H. Nettleton, A. E. Boardman, A. B. Slater, W. E. Cosgrove, Edward G. Pratt, W. H. Pearson, Frederic Egner, W. E. Barrows, Walton Clark, J. P. Harbison, George G. Ramsdell, Norman G. Kenan, Eugene Vanderpool, E. C. Brown, G. N. Clapp, George W. Graeff, Jr., D. R. Warmington and F. E. Barker. In addition to the above the following letter from Mr. E. H. Jenkins, President of the Western Gas Association, was received:

COLUMBUS, GA., March 15th, 1894.

IRVIN BUTTERWORTH, Esq., President Ohio Gas Association:

Dear Sir—Allow me to thank you for your kind invitation to attend the tenth annual meeting of the Ohio Gas Light Association. I had fully intended giving myself the pleasure, but find it impossible for me to get away at present time. I wish to extend an invitation to the members of the Ohio Association to attend the meeting of the Western Gas Association, in Cleveland, O., May 16, 17 and 18 next. We expect to make this an extremely interesting and valuable meeting. It is proposed to have an excellent exhibit of gas appliances of all kinds. The Committe on Electrical Current Action on Gas and Water Pipes already have a very valuable report ready to make, and a number of papers will be presented on practical and timely subjects. We shall be pleased to welcome each and every one of your members at this meeting. With best wishes for the success of the Ohio Association, and especially the tenth annual, I am sincerely,

E. H. JENKINS, Pres. Western Gas Association.

Mr. Butterworth also received the following letter from Mr. Alex. C. Humphreys:

PHILADELPHIA, PA., March 19th, 1894.

MR. IRVIN BUTTERWORTH, Pres. Ohio Gas Light Association, Columbus, Ohio:

My Dear Mr. Butterworth—I am just in receipt of the programme for meeting of the Ohio Association about to take place. Reading over the programme makes me more than ever regret that my other engagements will prevent me from being present. I was so extremely pleased with the practical and businesslike air of the meeting at which I was elected a member, that I cannot help regretting being kept away from any of the meetings. I notice that the meeting about to take place has got a programme mapped out which ought to be full of interest for all. Trusting that you may have a thoroughly successful reunion, I am sincerely yours, ALEX. C. HUMPHREYS.

The President—The letter from Mr. Humphreys, I think, fully indicates we have made no mistake in honoring him, by giving him the opportunity of honoring us by being an honorary member, and I think it would be proper for the Secretary to be instructed to telegraph Mr. Humphreys the announcement of the fact that he has been elected an honorary member of our Association, and unless there is further instruction I will advise the Secretary to address a telegram to Mr. Humphreys to that effect. I am very sure also that I voice the sentiment of the Association in accepting in their behalf Mr. Jenkins' very kind invitation to attend the Western meeting at Cleveland. You will try to do so individually. It might be proper at this point, inasmuch as Mr. Jenkins' letter spoke of a large exhibit of gas stoves and other gas appliances at Cleveland, in connection with the Western meeting, to explain that we had attempted to have an exhibit of gas stoves in connection with this meeting, and addressed communications to the various gas stove manufacturers, inviting them to exhibit, or asking if they cared to make an exhibit. Out of 19 or 20 concerns addressed we received, I think, about 6 affirmative answers, expressing a willingness to exhibit, but since then some of those 6 withdrew their consent, and as we found the exhibit would not be a thorough or complete one, it was declared off. However, an opportunity was left to any manufacturer of gas stoves, who desired to do so, to make an individval exhibition on his own account. This opportunity has been taken advantage of by one manufacturer, whose exhibit is below in this building, and you can see it there. There are other exhibits in the same place which may be of interest to you. The next thing in order is the report of the Tar Committee, the only standing committees outside of this having been reported. I, as Chairman of the Tar Committee, will beg leave to read that report:

REPORT OF THE TAR COMMITTEE.

*Gentlemen of the Ohio Gas Light Association:* Your Committee on Tar was appointed at your last annual meeting, with instructions "to investigate and ascertain what a tar refinery would cost for the manufacture of pitch for electric light carbons, and to communicate with the different gas companies throughout the State to ascertain if they would co-operate in the matter of establishing a central tar refinery and subscribe to the capital stock of such refinery in proportion to the capital stock of their respective companies." According to the best information obtainable by us, there are annually used in the manufacture of electric light carbons in this country about 3,000 tons of pitch, representing in the neighborhood of 15,000 to 18,000 barrels of tar. As nearly as we can ascertain it, the cost of a distillery of sufficient capacity for handling this amount of tar would be about $8,000.

Following your instructions, we prepared a carefully considered plan for the co operation of the Ohio gas companies in the joint distillation of their tar, and submitted it to all the companies in the State, about January 1st of this year. Most of the larger companies had already sold their tar for the present year; but of the companies who had not, those at Warren, Portsmouth, Springfield, Zanesville, Columbus and Athens expressed a readiness to co operate under the plan proposed. Your Committee was not authorized to take any further action pending

this meeting. In the meantime the Springfield Company has been obliged to sell its tar, for the current year, on account of limited storage room and its inability to contract for less than a year. It will again be in readiness to co-operate at the end of the year. For similar reasons, probably, the Zanesville Company's agreement to co-operate terminates with the 1st of April. The Columbus Gas Company, realizing that much time would be required for uniting the gas companies under a plan of co-operating and beginning actual work thereunder, and desiring to be in position to secure orders for pitch, for early summer delivery, are already proceeding with the erection of a distillery on their own account, making provision for other companies to join them later.

IRVIN BUTTERWORTH,
J. W. R. CLINE,
JEROME PENN,
CHARLES H. WELCH,
} Tar Committee.

The President—The printed matter that was sent out by this Committee is familiar to you all, at least to all Ohio gas men. It is very voluminous, and I do not consider it necessary to be read. It is here, and if any gentleman wants to examine it he can see the plans that were submitted. What shall be done with the report of the Tar Committee? It simply reports that it carried out the instructions given at the last meeting. It remains for the Association to decide what, if anything, shall next be done, or whether it shall be left in the hands of the gas companies to act individually. If there are no motions to be made the report will be accepted and filed as usual.

Mr. Stacey—It seems to me the Committee should be continued and instructed to go ahead with the matter as far as they can.

The President—Our instructions were simply to ascertain if the companies would co-operate. We were not authorized to go any further.

Mr. Stacey—I understand the trouble is that they have already sold their tar and were not, therefore, ready to co-operate with the Committee. Probably after a while they would be in a situation that they can.

The President—Then probably your motion would be that the Committee be continued, with instructions to take any further action that they see proper.

Mr. Stacey—Yes; give them full power to do anything that they think advisable.

Mr. Tayler—I second the motion.

Mr. Welch—It is hardly courteous for me, being a member of the Committee, to make any recommendations, but I think the continuance of the Committee would be proper—either that Committee or some other Committee—and I think probably important matters will come up in the next year that the Association would be interested in. I am not recommending the continuance of this Committee particularly, but there should be some such Committee in my judgment.

The President—Mr. Stacey's motion, I believe, carried with it the continuance of the personnel of the Committee for the ensuing year. I have no ambition to serve upon the Committee, I assure you.

The question being upon the motion of Mr. Stacey, it prevailed unanimously.

The President here read the following

## INAUGURAL ADDRESS.

*To the Members of the Ohio Gas Light Association:*

Gentlemen—We have now reached the 10th milestone of our journey as an Association, and have met, we might say, to celebrate our "tin wedding." May the occasion be one of rejoicing in the past and of hope for the future, with full satisfaction in the wedlock that binds us together as an Association.

The close of the first decade of our existence is a fitting time for retrospection and introspection. The following table gives us a quick and comprehensive glance at our past history:

| Meeting. | Date. | Meeting Place. | Papers Read. | Old Members Present. | New Members Admitted. | Died During Year. |
|---|---|---|---|---|---|---|
| Organization. | Sept., 1884 | Columbus.. | 3 | 33 | .. | .. |
| 1st Annual.. | Feb., 1885 | Cincinnati. | 11 | 29 | 30 | .. |
| 2d Annual... | Mar., 1886 | Springfield | 13 | 46 | 12 | 3 |
| 3d Annual... | Mar., 1887 | Dayton.... | 11 | 47 | 21 | 1 |
| 4th Annual.. | Mar., 1888 | Sandusky.. | 13 | 49 | 25 | 0 |
| 5th Annual.. | Mar., 1889 | Mansfield.. | 10 | 52 | 22 | 3 |
| 6th Annual.. | Mar., 1890 | Toledo..... | 9 | 56 | 33 | 0 |
| 7th Annual.. | Mar., 1891 | Zanesville.. | 8 | 50 | 8 | 1 |
| 8th Annual.. | Mar., 1892 | Columbus.. | 10 | 67 | 25 | 1 |
| 9th Annual.. | Mar., 1893 | Columbus.. | 8 | 71 | 13 | 3 |

The total attendance at each meeting, visitors included, has always been more than the sum of the old members present and the new ones admitted at that meeting, while the total active membership has increased with each year until it is now 161.

In the light of this record we believe that we need make no apology to the outside world for the existence of our Association. Its career demonstrates that its formation was justified and that some such organization was needed in Ohio. Ten years ago the gas men of the smaller cities of the State were comparatively unacquainted with each other. The officers of some of the large companies were enjoying the advantages of membership in the New England, American and Western Associations, which were already established, but the time and expense required in attending their meetings practically barred out nine-tenths of the smaller gas men of this and every other State. They were compelled to stay at home and continue "working out their own salvation with fear and trembling," contenting themselves with reading the reports of these big meetings in the Gas Journals, thus missing entirely the greatest benefit derivable from them, namely, the stimulus of personal contact with other gas men and the "swapping of pointers" with them between sessions. They also found that the papers and discussions reported at these meetings were, for the most part, entirely unadapted to their conditions and necessities, or intelligible by those only whose technical education enabled them to command salaries that the smaller companies could not afford to pay. If, perchance, an humble representative of some small works had the good fortune to be able to attend one of these meetings, he would hardly have the temerity, even if he had the opportunity, to submit questions or propose discussions applicable to works of the size of that with which he was connected. Now the situation is changed. The gas men of Ohio, big and little, are probably better acquainted with each other than those of any other State in the Union. The meetings of this Association have made this possible, and the sum total of our knowledge and efficiency has been largely increased thereby, while individual members have profited greatly. To these small meetings we can come as neighbors working under practically the same conditions, and in a small and quiet room, removed from the distractions of noisy streets and "with none to molest or make afraid," we can discuss our affairs in conversational tones and make our individual knowledge common property. And if some humble brother wants to inquire whether it would be more economical to run a bench of 3's in the daytime only, or otherwise to run 1½ retorts both night and day, he may do so without fear of ridicule and get a serious and helpful answer to his question. On the other hand, the larger problems of our business are courageously grappled with, with a satisfactory measure of justice. A unique feature of our Association has been the admission of the "supply men" into full voting and active membership. We have seen no necessity for making any distinction as members between the gas men proper and the supply men, believing that our interests are perfectly mutual. The harmony with which we have always worked together and the benefits which the Association has undoubtedly derived from this policy are sufficient evidences of its wisdom, at least as far as our Association is concerned. The business of our Association has always been conducted with as little machinery, and the meetings with as little formality, as possible. Our sessions have been characterized by unpretentiousness, simplicity, earnestness and the attention and attendance of the members. The result has been that in proportion to our necessarily limited numbers and individual attainments, and the small average size of the works represented by us, the efficiency of our Association has been greater, perhaps, during the past ten years, than that of any other Gas Association in the country.

That our Association is good for many more years of useful life is probable. It is true that many of the subjects that were new and fresh to us ten years ago, and that have furnished us much food for discussion, have now been quite thoroughly gone over; yet we must remember that new and younger members, who will want to discuss these old questions, are constantly coming in, and that new questions and new phases of old ones are continually arising; while the advantages and pleasures of personal and social contact between the gas men of our State, each being necessarily isolated from all others and in competition with none, are such as will tend strongly of themselves to continue these annual gatherings. There have been some misgivings in certain quarters lest the net result of a multiplicity of Gas Associations in this country would be detrimental to the maintenance of a high efficiency and standard of Association work as a whole. Nevertheless I think all signs point to an increase rather than a decrease in the number of small, local Associations, notwithstanding the pathway of recent history is strewn with the wrecks of many such organizations that have stranded in early infancy. In my judgment, men engaged in the gas business in the same State or vicinity cannot meet together any too often for their own good. The larger and older Associations will probably find it difficult to main-

tain their present efficiency under this subdivision of interest and effort, unless they soon adopt measures for raising the standard of their work. Something better should now be expected of them than a continuance of the papers and discussions—a thrashing over of the old straw—on the soluble problems that have received so much attention at their hands during the past quarter of a century. Indeed the American Association has already recognized the necessity they are under, and are taking steps toward elevating the standard and efficiency of their work.

They propose to enlist the co operation of other Associations in systematizing the work of all, and by the aid of committees to effect a thorough, exhaustive and conclusive treatment of subjects that have hereto fore been discussed piece meal, disconnectedly and to no definite purpose. To this end the American Association has appointed a "Committee on Fe leration," who have in charge the work of bringing the various Associations together in some plan of co-operation in this matter; and this committee has requested us to appoint a committee at this meeting to represent our Association in a joint conference of similar committees from all the Associations, to be held at Cleveland, on the day before the annual meeting of the Western Association, next May. It strikes me that the plan proposed contains great possibilities of good for us all, and I heartily recommend that we accede to the request and appoint such a committee.

Our retrospect of the past 10 years brings to light a remarkable and interesting coincidence. Ten years ago, at the first annual meeting of our Association, President Hickenlooper, in his address, used the following language: "I very much regret that you cannot properly be congratulated upon the general commercial and industrial prosperity of the country, with which our business interests are so peculiarly and closely identified. The past has been a year of universal business depression, marked mainly by a general shrinkage of values, curtailment in production, lowering of prices, decrease in value, of residuals and enforced economies. * * * But as surely as daylight follows darkness, returning confidence and renewed prosperity will follow this period of depression; and while there may be slight consolation in the knowledge that other countries are laboring under equally depressing conditions, it certainly shows that our misfortunes are not due to exceptional causes. * * * It is, therefore, but the part of wisdom to now take advantage of the abundance of labor and cheapness of material to place your works in condition to meet the demands which at no distant day will be made upon your carbonizing capacity." It is hard to read these words and believe that they were written for any other year than the one just past. Their applicability to present conditions is almost startling, and I could hardly do better in this connection than thus to repeat them and mark them "1894," instead of "1885," and say, for our encouragement, that as truly as Gen. Hickenlooper's prediction that better times would follow the depression of 10 years ago was verified, so will the present business depression gradually give way to the wholesome and healthful prosperity that is the birthright of this country by virtue of its diversified industries and its varied and unlimited resources. The "hard times" have undoubtedly curtailed the consumption of gas in Ohio as elsewhere during the past year, especially in manufacturing cities and towns; but I doubt if any other business has suffered as little from this cause. I believe, too, that we have suffered more from the unusually bright and warm weather that has prevailed during the past year than from business depression. From figures furnished me by the Signal Service Station in this city, I find that the temperature for the four months of last October, November, December and January averaged 5.6° higher than for the same months of the previous year; while the mean temperature of January alone was 34.5° in '94, as against 18.8° in '93, or 15.8° higher. The effect of this abnormally warm weather on the consumption of gas for fuel purposes has been, of course, considerable; but it is the bright, rather than the warm weather, that has affected it most. The Columbus Weather Bureau records furnish the following figures, showing the number of clear and cloudy days:

| | Clear. | Partly Cloudy. | Cloudy. |
|---|---|---|---|
| January and February, '93..... | 0 | 15 | 44 |
| January and February, '94..... | 14 | 23 | 22 |
| 1892. ..... | 60 | 145 | 161 |
| 1893..... | 79 | 133 | 153 |

We see that there were 19 more clear days in '93 than in '92, and a correspondingly less number of cloudy days; while for the first two months of this year there were only half as many cloudy days as during the same months of last year, and 14 clear days as against none at all in the first two months of '93. It is evident that the ratio of the day output to the total would not be affected by the hard times, and that, therefore, a comparison of this ratio for the two years would show only the effect of the warm and bright weather. It is also apparent that the warm weather of itself, would not decrease the consnmption of artificial gas in a town supplied with natural gas as much as it would in one not so supplied; and yet in Columbus, where the use of natural gas is quite general, and although the sales of artificial gas for the year compare favorably with those of last year on account of additional consumers, the percentage of the day output (from 6 A. M. to 6 P. M.) to the total has been much smaller this winter than last, due to the combined effect of warm and bright weather, as is shown by the following figures:

*Percentage of Day Output to the Total.*

| | Oct. | Nov. | Dec. | Jan. | Feb. | Average. |
|---|---|---|---|---|---|---|
| 1892.... | 25.7 | 35.4 | 37.5 | 36.6 | 32.9 | 33.6 |
| 1893.... | 23.5 | 31.2 | 33.5 | 32.2 | 28 8 | 29.8 |

This indicates a decrease of over 11 per cent. in the day consumption alone, or nearly 4 per cent. in the total output, all due entirely to abnormal weather conditions and totally independent of the hard times. It is doubtful whether the latter have affected the consumption of gas as much as this, except possibly in manufacturing towns. The fact that stores and business places are now generally lighted with electricity, leaving only the domestic lighting to the gas companies, would tend to lessen the effect of hard times upon the gas consumption. The great Gas Light and Coke Company, of London, England, suffered a decrease of 5½ per cent. in gas sales during the last half of '93, which they attribute chiefly to the bright weather. Because of the hard times, however, I think it probable that the gas business has suffered less than usual during the past year from electric competition. In fact, of the three foes mentioned, with which gas has had to contend during the year, the weather has probably been the most formidable, the hard times rank second, while electric competition has injured it the least. I fear, however, that our old enemy, oil lighting, has been more active and hurtful than ever. The combined effect of the hard times, stimulating various household economies; the improvement of oil lamps; and the growing "fad" of fancy piano and banquet lamps, has undoubtedly been to increase both the relative and actual amount of oil lighting during the past year. My observation has led me firmly to believe that in fully one half of the houses that are nominally lighted with gas, there is now as much oil lighting as gas lighting. It is no uncommon sight, in passing along the finer resident streets in the evening, to see four and even five large oil lamps, decorated with elaborate and colored silk shades, burning before the blindless windows of a single house, to the apparent total exclusion of gas light. These lamps are in practically every house. They are lighted every evening at dusk and continue to burn until bed time, while the few gas jets that are used are grudgingly lighted only when absolutely necessary, or in the rear or upper rooms of the house, and for as short a time as possible; meanwhile the oil lamps continue to glare serenely before the public gaze, advertising and perpetuating the growing custom of decorative oil lighting, to the great curtailment of gas lighting. Gas companies should recognize the danger of ignoring and the futility of combating the prevailing tendency toward the use of lamps for ornamental purposes. We should study rather to adapt ourselves to this tendency. We must devise and introduce decorative gas lamps. If we can make our gas lighting appliances meet the requirements, they will be largely used in preference to oil consuming devices. We must demonstrate the capabilities of gas lighting, and make it acceptable for all purposes by means of burners and lamps designed to meet the demands of the times. People have already grown tired of reading under gas jets four or five feet above their heads, that lavishly light the ceilings and upper side walls, but throw a feeble illumination on book or paper; they have already turned off the gas and are spending the long hours of the winter evenings reading by means of stand lamps consuming oil, simply because gas lamps have not been made well adapted to this purpose. We must go to some trouble and expense to procure, advertise and introduce satisfactory suspending drop lights and portable gas lamps. We must bring these improved gas lamps forcibly to the attention of our consumers, and popularize them. We must go to some expense to devise and introduce semi-portable piano and banquet gas lamps that will be ornamental and susceptible of elaborate decoration. We must make *them* the "fad," instead of oil lamps.

I have here samples of such gas lamps as I refer to. The drop lights and portables are neat, cheap, and give a good light on the table where it is wanted. The gas piano and banquet lamps are virtually portable, since they can be moved, while burning, over a circle of considerable area, and can be so arranged, at slight cost, as to be easily moved from one part of the room to another in a minute's time and without the use of tools. They are extensible as to height, delightfully convenient, cleanly and odorless, and are just as susceptible of decoration with elaborate shades as are the modern oil lamps. Oil lamps at present in use can also be easily converted, at a nominal cost, into gas lamps.

This, of course, is but a crude beginning, or a suggestion; but it will serve to illustrate the lines along which gas companies should begin to devote some thought and effort. The use of such lamps as these may never be general, and of course will never entirely supersede oil lamps for use and decoration, even in houses lighted with gas; but they will do something toward keeping before the public mind the flexibility of gas lighting and its adaptability to all modern requirements of custom and comfort, and will help to keep it in repute, amid the modern clamor for something new, as an old servant of such manifold usefulness as to render it still "a good thing to have in the house."

While the old adage of the gas business, that "the money is made or lost in the retort house," is just as true as ever, yet the theory and practice of gas manufacture itself are by this time quite well understood. There is, of course, still ample room for investigation and study in and about the gas works; but it seems to me that the important unsolved problems of our business have now passed forward, with the gas as it were, from the retort house or generating plant, through the street mains, and into the houses of the consumers themselves. It is to questions concerning the consumption of gas, rather than its manufacture, that we should now specially address ourselves. We know how to make the gas, now let us learn how to make the most out of it. We must study such subjects as the regulation and equalization of street main pressure, even to the burner tips; the proper ventilation of gas lighted rooms; increasing the quantity of light obtainable from a given quantity and quality of gas, in other words, more efficient burners; lessening the heat thrown off by gas burners, and of the deposit of dirt on ceilings of gas lighted rooms; the devising and introduction of satisfactory self-lighting gas burners and electric gas lighting apparatus; the production of gas flames that are silent, symmetrical and motionless; all to the end that every gas jet that burns may be a creditable advertisement and an eloquent witness of the merits of gas lighting, and that gas may be enabled to compete, not merely in cheapness, as at present, but also in convenience, cleanliness and general acceptability, with its new enemy which we are rapidly learning to respect, the electric light.

During the short life of this Association the average selling price of gas for lighting purposes in Ohio has decreased probably one third. The average net selling price of 77 Ohio gas companies at the present time is about $1.40, although the average price of the total gas sold in the State is not much above $1. It is safe to say that 10 years ago it was $1.50. If this rate of decrease should continue during the next decade, the average net selling price of all companies 10 years hence will be about 93 cents, while the average price of the total gas sold will be about 66 cents. This does not now seem possible, although the present average no doubt seemed impossible 10 years ago. While city councils and the public generally will, of course, continue "pounding" at the prices, we must remember that the conditions governing our ability to continue their reduction have materially changed. We now have in many cities in Ohio three more competitors than we had 10 years ago—namely, the arc and the incandescent electric lights and natural gas; consequently the lighting business, while much larger than formerly, has become so subdivided that the consumption of gas will not now respond so promptly or noticeably to a decrease in selling price as it has done in the past. We must also remember that while a still further, though it seems to me only a slight, cheapening of the cost of manufacture is possible, as the result largely of improved processes, perhaps, yet the cost of distribution is bound to increase, for at least three reasons: (1) The larger consumers are gradually substituting electricity for gas, and although the number of domestic consumers, and the quantity of gas sold, are increasing, the sales per meter are decreasing, causing additional distribution expense per thousand feet sold; (2) the fact that our streets are now quite generally paved with permanent stone-block, brick or asphalt pavements, makes all kinds of service and street main work, chargeable to distribution, more expensive; and (3), gas companies will be obliged hereafter to give much more personal attention to the individual wants of their consumers than they have heretofore done.

If you will examine your records you will find, I think, that during the last 6 or 7 years your net cost of distribution per 1,000 feet sold has increased about as much as your net cost in the holder has decreased. The problem, of course, is how to make and sell more gas with your present investment of capital; if you can do this you can lower your selling price and still make the same return upon your money. This is why a new consumer on an existing line of main is worth two for whom an extension of the main would be necessary; while a new day consumer is worth two new night consumers. Those companies not favored with natural gas competition can do themselves much good in this direction by promoting the use of gas for fuel, and especially for cooking; but as even this is generally accomplished by means of a great sacrifice in selling price for such gas, and as considerable of it would still be consumed at night, and as duplication of meters would be necessary, the possibilities in this direction must not be exaggerated.

On the whole, I do not look for nearly as great a rate of reduction in the selling price of gas in the next 10 years as the past 10 has witnessed. Neither do I think that any further, or at least any considerable reduction must needs be made in order that gas may well hold its own. There is no immediate likelihood that the selling rates of the electric light will be decreased, and gas can both now and hereafter easily compete with it in cost for lighting, and at the same time and price build up a profitable fuel business; while the Welsbach and other improved burners are full of possibilities for an increase in the efficiency derived from the gas, that will virtually amount to a reduction in its price.

Hardly less important to gas companies than the competition they are likely to meet with, is the danger of hostile and misguided legislation affecting their interests, including the heresy of municipal control. The danger from the latter source, however, is somewhat lessened by the fact that most of the gas companies have now lost the street lighting; but it is likely to remain threateningly large until people come to realize that municipal control can never be accomplished with justice and economy until the burdens and benefits arising thereunder are distributed in like proportions to the same persons, and human nature has become so perfected that men will work as arduously and honestly for the public as for themselves.

There is now, also, a popular agitation favoring the taxation of the franchises of quasi-public corporations, or a special tax that virtually amounts to a franchise tax. Whatever may be said of the justice of such taxation in other States, or of other corporations than gas companies in Ohio, surely there can be no question as to the injustice of any law that would impose upon the gas companies of Ohio a special tax upon their supposedly "valuable" franchises, unless private corporations and firms of all kinds are taxed in the same manner. I defy any lawmaker to point out one single feature wherein the "franchise" of an Ohio gas company is specially "valuable." In what respect has an Ohio gas company a more valuable or taxable right, or franchise, than that of a laundering company, for instance? If one is more valuable than the other, it is in degree and not in kind. There may be some slight legal or technical difference between the nature of the easement which the gas company has in the streets and the right of the laundering company to run its wagons thereon, but practically there is no difference that makes the right of the one any more deserving of special taxation than the other. The gas company's franchise does not exclude other gas companies, any more than the laundering company's right gives it a monopoly. Other gas companies can and do come in at any time, by simply submitting to the slight formality of a popular vote, the result of which is a foregone conclusion. In fact, it seems to me that the laundering company's right is the far more valuable one of the two. The laundering company can go into business at any time without asking permission of the people—the gas company must first obtain such permission; the laundering company can fix its own prices—the gas company's prices are arbitrarily fixed by the city council, notwithstanding competition would effectually govern them and make them reasonable; the laundering company is liable to be paid a bonus by the city to secure its establishment therein—the gas company is liable to be required to pay the city a bonus, although it does not wear out or occupy the streets nearly as much as does the laundering company; the laundering company's business is not liable to be confiscated by the municipality—the gas company's business is liable to be ruined at any time by the municipality assuming the business of making gas and selling it at cost or less, without first offering the gas company a fair price for its property. And yet, with gross inconsistency and injustice, it is proposed to specially tax the franchise of the gas company because it is assumed to be valuable, while the equally or more valuable rights of the laundering company, and of other corporations and firms, such as transfer companies, grocers, coal dealers, etc., which are serving the public and using the public's streets in essentially the same sense and manner, are to be totally exempt from such taxation. All gas men and gas stockholders in the State should take every opportunity to call the attention of their representatives in the Legislature to the injustice of the proposed legislation.

In closing, I would, with much satisfaction and thankfulness, call your attention to the fact that the pleasure of this celebration of our tenth anniversary is not marred by the record of any depletion in our ranks during the past year by the hand of death. It is seldom that we have been so favored.

We now have before us, for our disposal at this meeting, papers and

questions touching many of the practical, technical and business phases of our profession. The programme, thanks to our Secretary, is an excellent one. Whether our treatment of it shall be equally so, depends entirely upon you. Your presiding officer can do but little. Valuable and interesting as are the papers to be presented, the discussions thereon should be made more so. "The paper should be the text only; the discussion the sermon." Let no one hesitate to ask a question or express his opinion on any subject under consideration. I specially request, also, that you be punctual in your attendance at the time named on the programme for the opening of each session.

Asking your indulgence and assistance in the conduct of this meeting, and thanking you for your patient attention, I now declare our tenth annual meeting to be open for such further business as may properly come before it.

*Discussion.*

The President—In connection with the reading of this "so called" President's address I would like to ask a favor. Heretofore the custom of this Association has been to refer the President's address to a committee, under the assumption that it merited specially tender and considerate treatment, and that it was rather more sacred than the productions of an ordinary member. I would esteem it a compliment, whether it be merited or not, if, instead of doing that, you should, if it merits any discussion or treatment whatever, discuss it as you would any other paper. It is simply a paper on different phases of the gas business, and it seems to me it should be discussed, if there is any merit in it calling for discussion, rather than to refer it to this committee, which usually has drafted a few complimentary resolutions that ended it. I give this to you as my wish in the matter—that it be discussed as any other paper.

Mr. Welch—I fully agree with the spirit of the President's request that the address be not submitted to a committee. I presume that the custom grew out of the fact that there was no appeal from the throne—that the President is authority and is a law unto himself; but I see no reason why the production of the President should not be classed along with other literary productions of the Association, and that he should be submitted to catechism and cross-examination as others are. One matter that I wish to call attention to is the matter of federation among Associations. It probably would be proper at this time to make a motion that a committee be appointed for this purpose to co-operate with other committees already appointed; and if the Chairman will permit I will suggest the names of that committee. I am only going to suggest the names. I understand that Mr. Faben is on a similar committee from another Association, and I suggest that Mr. Faben be made a member of this committee. I would also suggest that Mr. Butterworth be a member, and I think it would help the workings of the joint committee if the Secretary of this Association should be also a member. I simply make a motion that that committee be appointed. (Seconded.)

Mr. Cantine—I am not quite clear as to what this federation would amount to. Would it mean the absorption of this Ohio Gas Light Association into the American, the New England, the Western, or what not? We would hate very much to lose our identity. If that is the object of this I would be opposed to it.

The President—I think the plan under contemplation by the Committee on Federation does not contemplate that any Association shall lose its identity or individuality in any sense. I would request that Mr. Addicks, who, I think, is on the Committee on Federation of the American Association, and who is present, would address us on the subject. I am pleased to introduce Mr. Addicks, of Boston.

Mr. Addicks—There is also another member (Mr. Chollar) of this Federation Committee present, and he has probably some distinct ideas on the subject. Of course, I can only speak for myself alone and not for the Committee. My personal idea is that of the President, as he has already put it in his annual address. I think that the fostering of the local Associations is an extremely important one. I think that the strength of the gas fraternity in the future will be due more to the smaller Associations in the individual States than to the larger Associations. On the other hand, the larger Associations are extremely valuable, in that all parts of the country come in contact with each other. Now, so far as the federation idea is concerned, from my point of view it merely consists in placing the proceedings of all the Associations under one cover, so that every Association will have the proceedings of every other Association, bound and placed on the rack alongside of the desk of the members, so that they can turn to it at any time, and I think that is extremely valuable. We all know how busy we are at times, and we want our information as near at hand as possible. The next important thing, from my point of view, is that a method of communication will be established. The Ohio Association, investigating any particular question, would like to have the same question investigated by the other Associations, and it is merely a means of communicating by standing committees. All these questions are to be referred to the standing committee of each Association, and in that way attain concentrated action without delay and without complication. I don't think there is anything in the idea of the amalgamation of all the Associations into one grand Association and then splitting up into sections. That method is followed by the Chemical Societies, but I don't think it is applicable except in starting a new scheme. The present organization I believe to be the rightful one, because the most natural one, and the personal contact and close interests that the Associations have, as the New England Association, the Ohio Association, the Pacific Coast and the Michigan Association, are extremely necessary for the general strength of the whole fraternity. I thank you, gentlemen, for your kindness in being requested to speak on the subject.

The President—I have considerable delicacy in putting the question, and it will possibly be a little more consistent for you to do so.

Mr. Welch—I move that the motion made by myself be approved by this Association. (The motion unanimously prevailed.)

The President—I wish to say in behalf of my little display of gas piano lamps, that through a mistake on the part of the manufacturer, the central metal tube, through which the flexible gas tube was made to rise or fall, was not made large enough, and we had to get ordinary white rubber tubing, which is unsightly. I had intended to use a mohair flexible tubing, which can be made to match the carpet; the base of the lamps can also be made so as to more nearly screen the tubing from sight. While we are looking in the direction of these lamps, it only requires us to look a few feet further to the west to see the prepayment meter which Mr. Tufts has brought to our meeting. It is there for your examination.

Mr. Cantine—Before we get interested in gas appliances, I would suggest the propriety of our paying a little attention to the very excellent address that we have just listened to by the President, and I move that the thanks of the Association be tendered to the President for it. I see no opportunity to attack it at any point. It reminds me of what an old acquaintance of mine used to say in Michigan, that he "fully coincided with their acquiesce." (Vote of thanks adopted.)

Mr. Nash—I would like to ask if these lamps are on the market, or if they were made specially to order?

The President—They were made specially to order. The largest companies did not have a single specimen that I could find. I do not base any very great hopes for the future of the gas business on this particular matter, but it is one of the little things that I think will help to educate the public to the capabilities and flexibility of gas lighting. I propose placing these along High street in the show windows, letting them burn until 10 o'clock, P. M., and especially about Christmas time. They would make a nice Christmas present.

Mr. W. W. Prichard, of Portsmouth, then read the following paper on

## LEAKS.

This paper is not intended to treat of gas leaks, but other leaks about the works. One of the first leaks I noticed on entering the business was that the street men, when putting in a service, were obliged to go to the works every time to cut and thread a pipe, taking an hour or more, and often on returning found the pipe either too long or too short. Besides this loss of time, the helpers were idle until their return. To remedy this I had a handcart made, fitted with a simple pipe vise on the rear end, since which time we cut and thread our pipes at the place we are working. In addition to the saving of much time in this way, we carry in our cart an assortment of fittings, which saves many a trip to the works. In the braces on the sides we carry several lengths of pipe. This cart and vise, costing only about $20, has saved hundreds in time in the years it has been in use.

A large leak, or loss of time and money, is in poor or insufficient tools. I found a stoker using a charging scoop which took 26 scoopfuls to a charge. The new one furnished him required but 13, keeping the retort open only half the time. During my first week I saw one of the men try three pairs of old pipe tongs before he could screw two pieces of ¾ inch pipe together. New pipe wrenches remedied this. Worn out dies are a source of much trouble and loss. We use stocks with adjustable dies, which are better than solid ones, as one can cut threads large or small. The fittings on the market lately seem to be tapped too small for threads cut by the solid dies. With good tools the men accomplish more, do better work, and are much more willing to do it right.

During my first year we had one bench each of 3's, 4's and 5's—12 retorts—with which two men were grinding their lives out, trying to make 30,000 feet of gas per day, asking for a helper when they reached the 30,000. Looking around for something better, we put in a bench of 4's

with a furnace 42 inches deep. With this we made 32,000 feet of gas in one day, on a trial. Later, with the same bench of 4's and one old style of 3, we made a third more gas than with the former 12 retorts, and the men had one less fire to attend. In addition, the 4's did not require firing one-quarter as often, and no helper was needed.

There are also many leaks about a works caused by inconvenient arrangement. I wish often that I could re-arrange our retort, purifying and coal houses so as to bring the coal house adjacent to the retort house. As it is, our purifying house is between them. Cannot a shorter way be made to the coal house, and a few steps be saved each trip, by removing some obstacle that had better be out of the way?

I once noticed our men had to carry water 20 feet for a bench of 6's, to quench the coke; taking three bucketsful to the retort, a man would walk 720 feet for one round; for five rounds a day, 3,600 feet; for 365 days, 1,314,000 feet, or 248.86 miles a year. A combination of a few leaks like this would require an extra man. Would not a few feet of pipe and an extra faucet bring the water nearer where needed?

Is not a part of your machinery out of repair, requiring much of the men's time to keep it moving; and would not an hour's work by a machinist save hours of time daily? Our men were handling the purifying material two or three times to get it into the boxes. By tearing out a platform and using the planks to make a run for a wheelbarrow, it saved one handling at least.

In the electric department the engineer had to take up a trap door, and crawl on his hands and knees about 30 feet to get at some pipes and valves which often need attention. By simply cutting a door through a brick wall and taking out a little dirt, the engineer can go down the cellar stairs and step through the door directly to the pipes. The opening of a stairway door covered a door entering the shop, in such a manner that each time the shop was entered the stair door had to be closed, making it exceedingly troublesome to carry anything into or out of the building. As an awkward door was always open, by taking it down and removing the studding the other door now swings into the shop, leaving a free passageway. Often a similar trouble can be obviated by the use of sliding doors. Inconvenient arrangements such as these frequently cause workmen to lose their temper, resulting in the damage and destruction of many tools.

The coke crusher was elevated on a frame, making the hopper oven 7 feet from the floor; a man could not throw a full fork into it for any length of time. By taking out the frame and lowering the crusher one man can do twice the work.

A horizontal engine was strapped upright to the wall near the crusher, but was so badly worn by the grit of the coke dust it could be heard a square away, seemed always to be out of order, and we out of crushed coke. I had the engine taken down, overhauled and placed on the wall inside the shop; cut an opening, with a sliding door, ran a line of shafting through the wall to the crusher and extending into the shop, from which we obtain power for a grindstone and pipe machine. It is now no trouble to keep a stock of crushed coke.

The pipe fittings were kept on two shelves, and looked as if they might have originally been emptied in a pile on the floor, then spread on the shelves with a shovel. The men had to hunt through the shelves to find what was needed. An expenditure of $3 extended a set of partitioned shelves to the ceiling, enabling us to keep each kind of fitting by itself, those oftenest used being kept at the bottom. The men can now find what they want at a glance, and in making up an order it is much easier to see what is needed.

On the books where the monthly statements were registered, by putting down all the ciphers for the hundreds and carrying the product the second time, the former bookkeepers were making from eight to ten surplus figures for each consumer, aggregating thousands each month. The work was lessened by omitting these unnecessary figures.

The cause of a large leak in my present position is a want of proper records of mains, service pipes, drips and meters. In cutting off old lamp posts last month we spent a whole day trying to find where one pipe came from; five minutes occupied in making a record would have saved us a whole day's labor of three men. We dug over a space about 25 feet square trying to find a drip, the only record of which was in "Mike's" head; "he could put his foot on the spot," but, alas, his foot was not large enough. If you have no map, start one at once; carry a book in your pocket, put down each day what is done. If you find a pipe or a drip, make a note of it, and on a rainy day enter up your notes in a permanent record.

A meter was found last fall, all trace of which appeared to be lost; but one of the men remembering that a Mr. Jones formerly burned gas in that house, a search through the old meter books revealed the fact that it had not been read for 9 years.

Study your works, especially the older ones, and you will find many chances for stopping leaks.

Keep up your repairs; you do not keep down expenses by letting things go, as you may be "jumping over a dollar to save a nickel." You do not make anything by making your men take two strokes to accomplish the work of one; show them how to make *one* take the place of two and they will appreciate it. Do not be afraid to talk to your men about work to be done. They doing the work, see things which you do not, and you will catch many an idea; besides, they will appreciate your having enough confidence in them to ask their opinion. The modern steam engine is not one man's invention, but the combined ideas of many. "What we do not know" would fill a larger book than what we know. I hope *I* may have added something to *your* book.

*Discussion.*

Mr. Nash—Speaking of adjustable dies, wouldn't there be danger of having leaks from using a die of that kind, by having a variable thread?

Mr. Prichard—Cut your thread to suit the occasion.

Mr. Nash—If you cut your thread too small you destroy it entirely.

Mr. Prichard—You can cut it just as you want it.

Mr. Printz—It appears from Mr. Prichard's paper that he has struck on many hard lines. I don't think I could agree with him on the adjustable die. I think I would prefer the solid die, although in some cases an adjustable die would answer very well. Another point I do not quite agree with is where he speaks of charging the retort with a shovel, by which a man can place a charge in 13 throws. It strikes me that would be, if it was an ordinary charge, quite a lift to be placed with a shovel. I find, with the ordinary charge of, say, 320 to 330 pounds, about 20 or 22 throws of a shovel would be as much as a man wants to handle, making about 16 pounds to the load; if he takes more than that he is not likely to get the charge in the retort properly.

Mr. Prichard—Our retort is not quite as high as yours.

Mr. Printz—Then, again, you speak of the saving in the handling of the purifying material. I have always found that the more you handle the purifying material the better it is. The handling of it two or three times is not any disadvantage. On those points I disagree with Mr. Prichard. There are many other points on which I agree with him. In the main he is about right. I think the paper is one which strikes many good points.

Mr. Gwynn—What charge do you refer to which you think ought to be thrown with 13 scoops?

Mr. Prichard—About 250 pounds. This was done some time ago in Ironton, but it was by actual count.

Mr. Nash—I think Mr. Prichard has had hard lines in many respects. His works have not been very well arranged.

The President—Has anyone else any remarks to make in connection with this paper? I think Mr. Prichard has done us all a service in calling our attention to the little leaks at the spigot, which we had better look after. I have often heard Mr. McMillin say, "Take care of the little things, and the big things will take care of themselves to some extent." I think Mr. Prichard's statement, towards the last of his paper, where he recommends that superintendents consult with their employees and ordinary workmen, and listen to what they say and heed their suggestions, or at least consider them, is very valuable. I know my men have often given me suggestions which were valuable. They knew the practical details better than I did.

On motion of Mr. Cline, a vote of thanks was tendered to Mr. Prichard.

Prior to the time of adjournment the President called the attention of the members to the fact that the Secretary was ready to furnish application blanks to anyone desiring to join the Association, and everyone was cordially invited to join. The applications would be acted upon in proper order. The President also stated that an arrangement had been made for the members of the Association to dine together at the Neil House this evening; and on motion of Mr. Cantine the officers of the Columbus Gas Company were invited to be the guests of the Association. The President acknowledged the invitation and declared the Association adjourned to 2 P.M.

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FIRST DAY—AFTERNOON SESSION.

The Convention was called to order by the President, and the Secretary read the following message:

PHILADELPHIA, March 21, 1894.

A. P. LATHROP, Secretary Ohio Gas Light Association:

Your telegram received, and has given me great pleasure. Please present my warm thanks to the Association, and assure them that I thoroughly appreciate the honor conferred. ALEX. C. HUMPHREYS.

The President—The first thing on the programme this afternoon is the paper by Mr. J. W. R. Cline, of Springfield, on the subject,

WELSBACH BURNERS WITH ARTIFICIAL GAS.

About the year 1880, Carl Auer, then a pupil of Prof. Bunsen, at the University of Heidelberg, became interested in the subject of illumination. Bunsen particularly impressed upon the mind of Auer that the present method of obtaining illumination from the combustion of gas in the ordinary way, in which the separated carbon particles are made incandescent through the heat produced by the combustion of the hydrogen, was far from being economical, inasmuch as the amount of light yielded was but a small percentage of the energy contained in the gas, and gave it as his opinion that the light of the future would be obtained by first converting the illuminating gas into a heating flame, through the medium of the well known burner bearing his name, and then applying the heat so produced as to bring to incandescence some refractory material. Young Auer revolved this suggestion in his mind, but before he had succeeded in obtaining any practical result, the electric light changed the current of his thoughts.

As is well known, in order to produce the incandescent electric light, it is necessary that the carbon filament be used in a vacuum. He saw the expensiveness of this method, and began a series of experiments to produce a filament made from refractory earths or oxides that could be used in the open air without being consumed. It was while engaged upon experiments of this nature that he produced this most wonderful burner.

Substantially, the burner consists of a cylinder of network suspended from a wire over the exit of a bunsen burner.

This cylindrical network is made by first weaving fine cotton thread into the shape desired. It is then dipped to the point of complete saturation in the chemical solution of the oxides of zirconium, lanthanum, thorium, yttrium, or certain other metals; then, attaching the mantle by a platinum wire, threaded through one end to a vertical wire bent at the top into a horizontal loop. A flame is then applied and the cotton entirely burned out, leaving in its place the oxides of the metals, which are almost absolutely indestructible by fire, and reproduce, in every detail, the form and texture of the destroyed cotton. The wire supporting this mantle is then set into a gallery attached to the burner, similar to the gallery of an argand burner, and thereby held over the exit of the gas. The gas, as it issues from the bunsen burner, burns only with a blue flame, but, impinging directly upon the mantle, heats it sufficiently to render it incandescent; producing a perfectly steady and clear column of light, about 3 inches high and about 1 inch in diameter, which may be made almost as white as daylight, or as yellow as the light of an oil lamp, as desired. It is claimed that a perfect combustion of the gas is obtained, and the vitiation of the atmosphere, which always accompanies the present methods of gas lighting, is absolutely avoided. Besides possessing these advantages, it is claimed that the Welsbach burner will produce 25-candle power to the foot of gas consumed. If it produces only half what its advocates claim for it, and at the same time gives a clear, brilliant, steady, white light, and of this there is no doubt, it is the best gas burner ever yet put on the market. This burner produces, at the least calculation, four times as much light as the ordinary gas burner consuming the same amount of gas. This is shown by tests made and certified to by such eminent experts as Dr. Ford, U. S. Inspector of Gas and Meters, Washington, D. C.; Wm. Wallace, Public Analyst and Gas Examiner for the city of Glasgow; Conrad W. Cooke, member of the Council of the Physical Society, London, and others. All of whom find at least 20-candle power to the cubic foot of gas consumed by this burner. The masses of the people know nothing, or next to nothing about candle power or expert photometrical tests as applied to light. They have their own way of measuring, and generally know when they have a good light.

It is true they were deceived for a time with the (so-called) incandescent electric light. With us, the Welsbach has proven the most effectual means of regaining many of our old consumers, who had become patrons of the electric light.

The burner was introduced into our city for artificial gas in January, 1893. Soon there was a great demand for it; hundreds were sold in a short time, displacing many electric lights, both arc and incandescent. And had it not been that the supply of burners entirely failed, so that from last October until February no burners could be obtained, the electric light company would have had to depend almost entirely on street lighting.

I favor this burner because it is a blessing to the consumer, reducing his bills while very greatly increasing his light. With the ordinary burner the consumer generally complains that his bills are increasing and his light decreasing. But the consumer who uses the Welsbach burner is perfectly satisfied with his light and his *light* bills. It is to the interest of the gas company to furnish its patrons with the best light for the least money. We know (if our consumers do not) that we desire to make their bills as small as possible. Consumers are frequently lost on account of large bills. But with this burner we reduce the amount of gas to the consumer, and at the same time increase the number of our consumers, and thus increase the total amount of gas consumed. At least 75 of the leading business houses in our city are using them at this time, and the demand for them is increasing daily. Clothing stores, drygoods houses, groceries, hotels, restaurants, saloons, drug stores, furniture houses, book stores, and in fact all classes of business houses are its patrons. I have no hesitancy in recommending this burner above all others. I shall continue to do so until something better, which has been tested and tried, and which is superior to anything now in the market shall make its appearance.

(To be continued.)

## Economical Use of Steam for Heat and Power.

Mr. W. S. Colburn, Engineer of the Minnesota State Reform School, in a letter to *Engineering Record*, remarks that there has been and is at the present day a great deal written and said by men on the economical production and use of steam. If a power plant is being built engineers will recommend the best engine, in their opinion, on the market, with all its necessary appurtenances. They put in the boilers and set up the engine and complete everything ready for starting, and the owners then employ a competent man as engineer to run it. How do they know he is competent? "Oh, he has a license from the State Inspector." Then they will look around and find some husky fellow for fireman who can shovel coal all day, and then start up the plant. Generally the first thing done is to indicate the engine, which shows all they expected, and possibly more. The owners are well satisfied and the establishment runs along for a time, say a year, when they commence to look around and wonder why it is that a firm in the neighboring town in the same business can manufacture so much cheaper than they. They have the same kind of an engine and other things equal, but find, instead of a man for fireman who only knows enough to shovel coal in the furnace, their competitor has an expert fireman who is trying to get all he can out of the fuel. This demonstrates the fact that the foundation of economy is in the proper generation of the steam, and it goes to show that insufficient interest is taken in the boiler room. To get good results from a steam plant I believe it should be equipped with modern appliances for handling and weighing the coal and handling and weighing the ashes. A record of the same can be kept daily, as though it was so much money taken in and paid out. This should be done for several reasons. (1) It makes it of interest to the person in charge of the plant to look after the matter more closely. (2) It is an inducement to the fireman to improve from day to day. (3) It makes it possible to determine more accurately the quality of coal received, whether the coal dealer is mixing two grades of coal and selling it for first-class. This will show in the percentage of ashes. (4) It will show whether more is used one day than another, and if the percentage of ashes is the same and the total pounds of coal is more, either more work is being done or something is wrong. It is better, if possible, to weigh all the water used in the boilers, so as to show whether or not you are getting all you should from the fuel used, and if not, it gives you something to work from to find the trouble. It may be in your boilers, build of furnaces, chimney, or the firing. One more thing I consider important, a recording gauge, which is as essential as either of the above; it shows whether boilers have been subjected to an extra amount of pressure at any time during your absence, and especially at night, when there is danger of the fireman falling asleep. It is better than all the watchmen you can employ, as the fireman will be sure to keep awake and attend to business, for he will not care to be called up and told he was not attending properly to his duties. Aside from this, anyone knows that the steadier a plant is run the more economical and better it is working. One more important item is a thermometer on the feed water pipe, which I consider as important as a recording gauge, as it shows any change of temperature, which will make considerable difference in the fuel used. There are many other things that would be required to make a scientific test, but stopping with the apparatus mentioned you would have far more than the average plant.

Another important point is the unequal consumption of fuel in large heating plants, even with the same temperature outside. It is caused by many different conditions. In cold weather less fuel is used than when it is more mild, as the building will be kept closed. In moderate

weather, instead of turning off the steam, the majority of people will throw open the windows, and you will be trying to heat all outdoors. The chances are that this increased coal consumption will be laid at the door of the engineer.

Unfortunately, bills are all that owners go by, and the chances are that if an engineer asks for the above-mentioned apparatus the owners reply that they know how much coal is bought, and "it will not make it any more or any less to weigh it, a thermometer will not change the temperature of the feed," etc. This is not so in all cases, but in a great many, and such a course has, I believe, caused more than one good plant to be condemned and the operator blamed for poor results. I believe we should have the means of telling when we are getting all we can out of our fuel.

## SPECIAL ENGLISH CORRESPONDENCE.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, March 10, 1894.

*Mr. Geo. Livesey on Current Gas Topics.—Nominal and Actual Dividends.—Proposed Association of Gas Undertakings.—Testing Leakage.*

Mr. George Livesey, the Chairman of the South Metropolitan Gas Company, has been well to the fore this month. At the usual half-yearly gathering of the shareholders in that prosperous undertaking with which his name is generally identified, he made a speech of unusual length and breadth. It was long in respect to time occupied in delivery, and broad as regards the number of items dealt with. It comprised some reference to the coal strike and present prices, nominal rates of dividend as compared with the actual profit received by the shareholders on their investments, the causes influencing the working expenses for making gas, in his own and also in a neighboring undertaking, the price at which gas could be sold, the profit sharing scheme as applied for employees and workmen, and the question of employers' liability for accidents to workmen, which is at present attracting a great deal of attention. Mr. Livesey has made a further deliverance, at the meeting of the Crystal Palace District Gas Company. Speaking on the occasion as the deputy Chairman, he had something more to say about the movements in the coal market, and their possible effect on the selling price of gas, and he also described the system of profit-sharing which had lately been adopted by the Crystal Palace Gas Company and their employees. Besides this he has recently made an important utterance, through the medium of the public press, on the question of the most suitable quality of gas for London gas consumers.

Perhaps it may be urged that there is nothing remarkable, when a gentleman occupying a prominent position speaks at some length or on a variety of subjects. But the remarkable part comes in when we remember that Mr. Livesey is one of those few persons who do not speak unless they have something to say. This apparent Irishism needs some explanation. Many people speak because they cannot keep quiet, or derive satisfaction from hearing their own voices—a satisfaction that is not always shared by their friends. Some give utterance because they feel that a speech is expected of them, and as a matter of duty, though perhaps not an agreeable task; and others because they think it good policy to make a display of eloquence on any and every available occasion. But Mr. Livesey has not only well digested his subjects in his mind but, if circumstances admit, has usually applied his ideas in practice before making them public, and, therefore, his views are regarded and received as carrying a degree of solidity and originality that is absolutely unique. And this is the reason why I regard it as a specially important feature of the history and progress of our industry, that he has been speaking upon so many different subjects.

The speech as the Chairman of the South Metropolitan Gas Company was a remarkable effort. If there was to be a gold medal awarded for the best and most appropriate address ever delivered before a body of gas shareholders, it would stand a good chance of securing that distinction, for seldom has the chairman of a gas company spoken so well or so appositely. But there is one point above enumerated that possibly requires further explanation, and that is the subject of nominal as compared with actual dividends. We frequently talk about 10, 12, or even a larger per cent. as a gas dividend, but it cannot be too widely known that this does not represent the actual proportion of profit received by a shareholder on his investment. For the last 20 years or so the law has compelled the sale of all new issues of gas capital by public auction to the highest bidder, and the premium realized above the nominal or par value of the shares is sunk in the capital account of the concern. The effect of this arrangement is to neutralize the nominal rate of dividend, and to bring the actual profit down to the market value of money. For example, stock entitled to a maximum dividend of 10 per cent. would sell for about double its par value; an 8 per cent. stock for 1⅔, and a 6 per cent. for 1¼. So that whatever the nominal rate of dividend may be, the actual return is kept down to 6 per cent. or less. One of the most important objections to this system—and there are many that might be urged—is the fact that it places gas undertakings at a great disadvantage in the eyes of the public. In season and out of season the shareholder is accused of appropriating or receiving a return on his investment that is equal to the nominal rate of dividend. So that while really getting only 5, or at most 6 per cent., he is told by discontented consumers that he ought to be satisfied with less profit and let them have their gas cheaper, while the coal contractors or the labor unions frequently give him a taste of the same tune. It is therefore evident that the difference between the nominal and the actual dividend should be slight, or, better still, nothing at all. One can stand a little grumbling if he really gets a heavy profit. It is the natural penalty of greatness. But gas shareholders have reason to complain when they are credited, or rather blamed, as getting 10 or 12 per cent., when in reality they only have about 5.

The advisability of forming a Gas Undertakings' Association, for the purpose of watching the progress of legislation in that interest, is under consideration. And evidence illustrating the urgent need for united action in this direction is not wanting. A remarkable letter appears in the columns of the *Journal of Gas Lighting*, etc., from the pen of Mr. Badham, of Westminster, giving examples of the way in which measures that would seriously affect, or even cripple the working of gas companies, may be rushed through Parliament without coming to the knowledge of the parties most concerned. The chief moral of this is, that just as the railway, the liquor traffic and other interests have their champions within the walls of the House of Commons, so gas companies must take care to get a friend or two amongst the ranks of that august assembly. One of the bills introduced this season (but subsequently dropped) was entitled "The Hours of Labor (Crown, etc., Servants) Bill." This title is not likely to attract the attention of managers of gas works as having any intimate connection with their operations. But that innocent looking "etc." *includes gas undertakings*, and amongst other things forbids the employment of any person for a period longer than six days of eight hours each per week, under a penalty of £50, to be paid by the manager. So we must look sharply after that "etc." It is related of a Cornishman on his first visit to London that after a modest refresher at a coffee house he was presented with a bill for tea, bread and butter, etc., and that he refused to pay for the "etc.," on the ground that he did not have it. And it appears that gas engineers must keep a pretty sharp lookout to see that they are not made to pay heavily for the "etc.," and that without ordering it. Another bill shows symptoms of an inclination to trespass upon the rights of gas companies as already granted by Parliament in respect to freedom from competition.

The fact that most gas undertakings have enjoyed a moderately steady and prosperous career for many years, seems to have led to the marking of the industry as a fair object for plunder in more than one quarter. The supporters of labor interests are seeking to tax its resources in every possible way, to the advantage of their particular class. A determined set has been made with a view of raising the assessment value of such undertakings, in connection with local and other taxes. Coal owners and contractors have in view the formation of an Association which is speciously represented to aim at the securing of regularity in the supply of coal and the avoidance of the evils that have lately been experienced. This pleasing prospect is, unfortunately, rather spoiled by the fact that some of the parties interested have spoken strongly, on other occasions, about the dividends paid by gas companies, and that without being informed on the question of nominal as compared with actual dividends, as above explained. As the result of such ignorance, they are in hopes that, by skillful manipulation, a unit or two out of such a high percentage may be manœuvred into their own pockets. Whatever the advantages that may be in store under the guise of regularity in delivery, it is certain that the proposed Association would not consider the supply of cheap coal, and that it would be a source of danger rather than otherwise. But this is not all. Recent increases of price, necessitated by the coal troubles, have roused the ire of some consumers, with the result that in London and some other places, the "Gas Consumers' Protective Association" has come up again. And the same causes that are operating to the prejudice of gas undertakings in the House of Commons are occasionally observable at the proceedings of every local authority in the country. All these things seem to point to a need for concerted action.

This, however, is merely an example of the proverbial repetition of

history. It was very similar considerations that led, in the year 1881, to the expansion of the "British Association of Gas Managers" into the "Gas Institute." And the Council of the Gas Institute has had, from time to time, proposals for taking up the whole of the work that could be accomplished by a Gas Undertakings Association, under its consideration. There has only been one hindrance in the way. That was the actual existence of a Gas and Water Companies' Association which aimed at doing the work here suggestad. The Gas Institute Council did not care to run in competition with established Societies. But the Gas and Water Companies' Association has just been wound up and closed, thus leaving a clear field for it. And if anything can be done in the way of united action, the Gas Institute, with its established offices, paid Secretary, and its connection of some 800 members throughout the length and breadth of the land, is the body to do it. We do not want fresh Associations. There are too many already. What we want is more united and more combined effort, and if useful work in this way can be done, it will be done by one strong central and representative Association, and not by a host of small ones.

An address recently delivered by Mr. J. Braddock, the President of the Manchester District Association of Gas Engineers, at the usual half-yearly meeting of that Association, is remarkable as giving a large amount of useful technical information in a plain and unassuming style. Though by no means a lengthy address, there is more pith and marrow in it than in a good half-dozen that might be named. One of your contemporaries, I believe, published a "wrinkle" column for some time, and Mr. Braddock's address would keep such a column going for a year or more. One of the items in it is specially worth repeating, and that is a simple method of testing and keeping a check upon the soundness of mains and services, in respect to the matter of unaccounted-for gas. Mr. Braddock makes a connection between the main inlet and the main outlet at the works, and places on that connection a meter of suitable capacity. For a district comprising 40 miles of mains, he uses a 400-light meter. Then at a suitable time on a summer day, when the consumption will in all probability be next to nothing, he closes all the outlet valves and supplies the district direct from the inlet through the meter, and thus obtains, by the indications of that instrument, a close approximation to the actual loss by leakage. But the special advantage of this plan is the facilities it affords for comparative tests at regular intervals. After sufficient numbers of observations have been tabulated, there is a record by which the state of the system may be tested at any time, showing whether the loss is increasing or diminishing, and also the effect of extensive additions or alterations to the mains. This does not exhaust the usefulness of the plan, which might be extended to afford a check on the public lighting.

## Coal Mining in Queensland.

Mr. Edward S. Wright, in a communication to the Federated Institute of Mining Engineers on this subject, says that the coal seams of Queensland lie in the Permo-Carboniferous formation, and are both numerous and thick, covering a large area around Bundamba and Ipswich. Coal has also been found in various other parts of the colony, including Jimbour, Townsville, Cooktown and Nosa, but this paper will be confined to the Ipswich coal fields, as the writer has not visited any of the others; it excludes also the Burrum coal field, near Maryborough, where a large quantity of coal is raised, and where the systems of working are much the same.

The most successful mines are owned by private individuals, who either own the land or have leased the coal at a royalty of about 12 cents per ton. The owners or lessees manage their own mines and perform part of the manual labor besides, as the price obtained for the coal will not pay the high salaries for manager, secretary, shipping agent, office rents, and directors' fees necessitated by companies; to make a profit, all must be workers. The principal collieries on the south side of the Bremer river, which divides Ipswich, are the New Chum, Lewis Thomas, Stafford Bros., and West Moreton. The shaft at West Moreton colliery, the deepest in the colony, is 640 feet deep; it is of oblong shape, 15 feet by 6½ feet, divided by a wooden brattice, 8 feet being used as a winding and a downcast shaft, the remainder being used as an upcast shaft. The winding engine has two direct-acting cylinders 22 inches in diameter, with two drums 11 feet in diameter, one of which is fitted with clutch gear. The pulleys, 11 feet in diameter, are set on a substantial and well-designed hardwood framing. The cages are two-decked, and carry two 7-cwt. tubs on each deck.

This is the best winding plant in the colony. The seam worked is 19 feet in thickness, dipping westward at the rate of 1 in 3; only 7 feet of this seam is at present worked, containing one stone band 8 inches thick; 5 feet, however, above this is workable coal if only proper means of cleaning it were erected. The coal contains about 7 per cent. of ash, and burns freely and well for both steam and household purposes. The coal is seldom screened, the system adopted being that of riddling underground, and leaving the slack in the mine, as there is no market for the whole of it. The price paid to the miner is 80 cents per ton, which prevails all over the district; for this the miner gets and riddles the coal, sets his own timber, lays the road and wheels the coal, sometimes a distance of 900 feet. The miners earn $2.16 to $2.64 per day of 9 hours. Other wages are about $1.68 per day; mechanics, $1.92 to $2.16 per day; and boys 72 cents to $1.44, according to size.

The prevailing method of working is bord-and-pillar, leaving small pillars to crush, with no intention of taking them out. But some of the mines, with the seam at a less inclination, leave larger pillars which may be worked when coming back. In place of brattice, the miners form an intake and return airway by gob, composed of the slack left in the mine, and kept up at the roadside by slabbing and props. The slack is liable to spontaneous combustion, and the gobs should either be leveled over after the bords are done, or each district securely sealed up; the latter plan is probably the better, as it enables air-currents to be shortened.

An attempt was made by Mr. Lewis Thomas to utilize the slack in the manufacture of fuel briquettes; he erected a plant and made a few hundred tons of fuel, but owing to the high cost of pitch the system was abandoned. No attempt has been made to produce different sizes of coal; the two varieties being simply riddled coal (a ¾ inch riddle being generally used) and slack. The largest output from any one mine is 500 tons per day, but this has not been obtained from one shaft There are numerous small mines opened by workingmen, who are afforded an opportunity of commencing for themselves in this way by the Government providing all rolling stock; and in fact nearly all the mines have been thus opened out by workingmen.

The coal on the south side of the Bremer river is non-coking, but on the north side another series of seams occur from which a very good coke is made and finds a ready market.

## ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

At the annual meeting of the Guild of Gas Managers the following officers were chosen for the ensuing year:

*President*—W. A. Wood, Boston, Mass.
*Vice President*—Chas. F. Spaulding, Waltham, Mass.
*Treasurer*—John A. Coffin, Gloucester, Mass.
*Secretary*—A. K. Quinn, Newport, R. I.

Mr. Oscar B. Werer informs us that the Rochester (N.Y.) Gas Light Company has awarded a contract for the erection of 10 benches of 9's to the Manhattan Firebrick and Enamelled Clay Retort Works of this city.

A company to erect and operate a lighting and fuel gas plant at Martinsville, Ind., has been incorporated by Messrs. H. J. Burb, E. J. Leonard, Anson Lentz, M. E. Wilson and L. C. Parker. It is proposed to work under the Parker process, and the local Council has been petitioned for the right to use the streets. This place is the capital of Morgan county, Ind., and is close to the west fork of White river, at a point midway between Indianapolis and Franklin. It has several large manufactories, and has a population of about 5,000.

The Berlin Iron Bridge Company, of East Berlin, Conn., is doing considerable iron bridge work at the present time. Among other contracts we note the following: 17 signal bridges for the Beston and Maine Railroad; 2 bridges, 200 feet long, for the town of Roxbury, Conn.; a bridge, 400 feet long, across the Connecticut river at Stratford, N. H.; a bridge, 350 feet long, at Turner, Maine; a bridge, 200 feet long, at Houlton, Maine; and a bridge, 200 feet long, at Moosup, Conn.

At the annual meeting of the Bay State Gas Company, of Delaware, held on March 21st at the Central Bank Building, Wilmington, Del., the following Directors were elected: F. H. Whipple (of Philadelphia), E. R. Toland (of Philadelphia), J. Edward Addicks, E. C. Fitz and W. E. Dillaway, of Boston. Something like 70,000 shares out of the total of 100,000 shares were represented, and the vote was unanimous.

The following is from the St. Paul (Minn.) *News*: "The St. Paul Gas Light Company has mortgaged its entire plant, including franchises, real and personal property acquired or to be acquired, to the New York Security and Trust Company. This blanket mortgage was given under

date of March 1, 1894, to secure an issue of general mortgage gold bonds to the amount of $5,000,000. The Gas Light Company decided to make this issue of bonds at a meeting of its shareholders, held Jan. 6, 1894, at which time it entered into a contract with William R. Merriam for the acquirement of the entire property and franchises of the St. Paul Light, Heat and Power Company. It also decided to extend and enlarge its business, to do which will require the expending of an immense sum of money. It was also desirous of reorganizing its affairs and of placing its bond and stock capitalization upon a permanent footing and of consolidating its funded debt into a single issue of bonds to be equally and ratably secured by a mortgage of all its property and franchises acquired or to be acquired, and bearing a lower rate of interest than do its now outstanding bonds. This issue of bonds will be due March 1, 1944, and will bear 5 per cent. interest."

THE authorities of Seattle, Wash., are discontinuing the use of incandescent electric lamps as rapidly as possible, and arc lamps are being substituted therefor.

THE Directors of the Exeter (N.H.) Gas Light Company have determined to increase the carbonizing capacity of the plant by the erection of two benches of 6's.

THE Commission appointed to value the plant of the Citizens Company, of Wakefield, Mass., which the town is desirous of purchasing, report that the value of the same is $144,680, which covers everything. We feel sure in saying that the Company will not accept this sum, since the experts retained by it give their valuation at something in excess of $250,000. The Company can appeal to the Supreme Court.

THE ordinance recently considered by the City Council, of Tacoma, Wash., which proposed to put the gas rate at $1.75 per 1,000 cubic feet (the ruling price is $2.25), was defeated by a vote of 8 to 3.

ON February 26, 1893, a two story frame house, at the corner of 26th and Illinois streets, Indianapolis, Ind., was wrecked by a gas explosion. Gas escaped into the cellar of the building from a broken service, and the explosion resulted from a visit to the cellar by Mrs. Frances Perigo, occupant of the house, who carried a lighted candle. Mrs. Perigo sustained severe bodily injuries, for which she subsequently brought an action for damages against the Gas Company, and was awarded the sum of $690 under a verdict in the Superior Court. This case is now on appeal. Another reminder of the affair recently came to light in the shape of an action brought by W. H. Corbaley, owner of the premises, against the Gas Company, complainant putting his damages at $1,200. The case was tried in the Superior Court, before jury, who awarded him $1,100.

AT the March meeting of the Board of Directors of the Montreal Gas Company a semi-annual dividend of 6 per cent. was declared, making 12 per sent. for the year. The annual meeting of the Company takes place this week, and it is confidently asserted that Mr. Jesse Joseph will not be re-elected President. Whether so or not, it is positively asserted that the Josephs interest in the Company now amounts to less than 1,000 shares, whereas a year ago that holding could not have been far from 3,300 shares.

THE Spencer (Mass.) *Sun* printing office presses are operated by a 2½-horse power gas engine of the Evans type, and the publishers of that paper, in proof of their satisfaction with the motor, say: "It is an excellent motor, and as a matter of economy we find it far superior to a steam engine of equal power, as we can run at least 33⅓ per cent. cheaper than we could get the same force by steam."

THE Taunton (Mass.) Gas Company has just placed a large gas range in the kitchen of the new building known as Oddfellows' Hall.

AT a recent meeting of the City Council of Peoria, Ills., a communication from the Peoria Gas Light and Coke Company was read and then referred to the Commissioners of Public Works. The communication sets forth that section 1,972 of the city ordinances requires the Company to lay its mains at a distance of not less than 10 feet from the center of the streets in said city, and that they shall be laid on the north and west sides of said streets. The Company then calls the attention of the Council to the fact that it has laid its mains in certain streets which the city is contemplating improving by the construction of sewers therein, and that the city, instead of laying the sewers in the centers of said streets, proposes to construct them in close proximity to the mains of the Company, and the excavation and filling for said sewers endanger the mains. The Company notifies the city of Peoria to protect its mains absolutely in their present position and preserve the same intact and prevent all escape of gas by reason of any disturbance in the construction of sewers; and the Company says it will hold the city responsible for all loss, cost or damage resulting to any of its pipes or mains in the improvement of any street by the laying of sewers, and will also hold the city liable for any loss from escaping gas or any other injury that may accrue to it, and that it will not look to any contractor or sub contractor, but will hold the city responsible.

A BARGAIN was made something over a fortnight ago by which the property of the El Dorado (Kas.) Gas and Electric Light Company was transferred to Wichita and El Dorado capitalists. The purchase price is reported to have been $60,000. The reconstructed Company bears the title of the El Dorado Light and Fuel Company, and its officers are: President, Rodolph Hatfield, of Wichita; Vice-President, Frank Barnard, Wichita; Secretary, V. P. Mooney, El Dorado; Superintendent, O. R. Cline, El Dorado.

THE following circular, from Mr. A. B. Slater, Jr., bearing date of Providence, R. I., March 10, 1894, and signed by him as Secretary of the American Gas Light Association, explains itself:

"*Dear Sir:* Under recent rulings of the Post Office Department, all papers published by colleges, fraternities and scientific or professional societies are now denied admission to the mails as second class matter, and hence such journals are compelled to pay from 8 to 16 times as much postage as other papers. To right this wrong a bill has been introduced by Senator Manderson in the Senate, and by Representative E. J. Hainer in the House, called the Manderson-Hainer Bill (S., 1,353, and H., 4,897); but unfortunately this bill applies only to 'benevolent or fraternal societies and to incorporated institutions of learning.' The object of this letter is to ask you to write at once to the authors of the bill, and to your member of Congress, and also to your Senators, not only favoring the bill, but asking that its provisions be extended to include 'the regular monthly or quarterly publications of scientific, engineering and other strictly professional societies.' Messrs. Manderson and Hainer have asked for popular support to their bill, which they are certain to obtain; and if the engineers of the country will promptly demand the recognition their society publications deserve, these may also be included in the bill. Until very recently these publications have been accorded the second class rates—1 cent per pound—but they are all ruled out, while the *Police Gazette* and the cheap blood and thunder papers still enjoy the privilege. Please give this matter your immediate attention and so cheapen the cost of each monthly publication about 50 cents per annum, and also obtain us that recognition which our proceedings deserve, and save us about $80, at least, per annum on the distribution of our Quarterly, which has been belated by awaiting the decision on our application for second class rates, but which must now be sent out as third class matter."

THE Tracy Gas Stove and Furnace Manufacturing Company, of East St. Louis, Ills., has been incorporated by Messrs. L. J. Tracy, Theodore Albus and Charles M. Elam.

INDIANAPOLIS, Ind., has determined that the moontable system of carrying on the public lighting is too antiquated; and none too soon.

AT the annual meeting of the Middletown (Conn.) Gas Light Company, Mr. A. B. Calef was elected President and Mr. H. L. Mansfield was chosen Secretary. The annual reports showed that the Company was in good financial condition.

WE are indebted for the following to a correspondent at Springfield, Ills.: "At a conference, held on March 19 at the Ridgely National Bank, between representatives of the Springfield Gas Light Company, the Mayor, and some of the larger consumers of gas, the question of the gas rates was discussed, and the matter of reaching an agreement in regard to prices to private consumers was in such a shape when the conference was concluded as to leave it in a good way for settlement. The result of the conference was that in response to an inquiry, with a view to favorable consideration by the Company, by President Charles Ridgely, the Mayor promised to lay before the Council with favorable recommendation, and the consumers of gas present promised to urge that body to accept on their behalf, a proposition for gas at $1 per 1,000 cubic feet to private consumers for a term of 5 years. President Ridgely said the Directors of the Company would meet in a day or so to consider such a proposition. Besides the Mayor, there were present, of the patrons of the Company, the Hon. John McCreery and Messrs. J. C. Klaholt, Chas. Bressmer, M. S. Kimball, W. J. Fogarty, H. Pierik,

G. W. Leaverton, Henry Thoma, G. S. Connelly, T. J. Murray and others. The Hon. John McCreery was elected Chairman of the meeting. The Gas Company was represented by President Charles Ridgely, Secretary Edward Ridgely, Wm. Ridgely, R. M. Ridgely, C. D. Roberts, James T. Jones and Supt. W. H. Odiorne. President Ridgely stated that the Gas Company was anxious to reach an agreement with its patrons as to the prices, and to have the question settled. The Company and its patrons ought, he said, to work toward an agreement along some principle. As a way out of the difficulty to reach such he submitted a proposition from the Company to furnish gas at a price as low as the lowest figures at which it is furnished to private consumers for lighting purposes in any city of Illinois of 20,000 people and upwards. The lowest price at which gas is so furnished was found to be $1.20 per 1,000, net. This proposition was discussed at length, after which Mr. McCreery stated that he thought a good basis to work on was a price that would leave the Gas Company the same relative profit that it was left at the time the present contract was made 10 years ago, which contract it was thought was a very fair one at that time. Mr. Ridgely said it was a good one for the city, as the Gas Company declared no dividend for two years afterward. A long discussion and various suggestions followed as to the rate of profit the Gas Company ought to have. Then the representatives of the Company withdrew, leaving the consumers present to consider and agree on some proposition. It was soon decided that $1.20 for gas was more than they were willing to pay and that $1 was a fairer price. After considerable talk it was agreed that the Mayor should offer the Company, to lay before the Council with favorable recommendation, a proposition for $1 gas. After the gas representatives re-entered the conference and further discussion was held, Mr. Ridgely inquired if those present would urge the Council to accept an agreement with the Company to furnish gas at $1 per 1,000 cubic feet to private consumers for 5 years, if the Company should submit such a proposition. The vote of the meeting resulted unanimously in the affirmative. Mr. Ridgely was disposed to attempt an agreement with the gas consumers and settle the question outside the Council, but Chairman McCreery urged that no satisfactory agreement could be made that way and the above noted agreement was reached. Mr. Ridgely stated that the movement in the Council to replace the gas lamps on the streets with electric lights would, if carried out, cost the city about $10,000 more per year than if the gas light contract was continued. He desired that the meeting express itself on the subject, but the conclusion was reached by those present that such an expression might weaken their influence with the Council in the matter of $1 gas."

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THE bill for the operation of a municipal gas and electric light plant at Annapolis, Md., has been defeated.

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THE Lawrence (Mass.) *American* says that a Haverhill (Mass.) man, in order to impress business methods on his son early in life, told his youngster that if he would see that the gas bill was paid before a certain date each month he could have the discount for himself. The Haverhill youngster took very kindly to the idea and captured the discount each time the bill came in To his father's surprise, however, the gas bill began to increase at a remarkable rate. He found one night that his son was burning gas all over the top of the house from 10 o'clock until 6 the next morning. The youngster had become a Napoleon of finance and had discovered the fact that the bigger the bill the bigger the discount.

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THE proprietors of the Erie (Pa.) Gas Company have purchased a plot of land directly north of their present works site, foot of Sassafras street, 600 by 100 feet, with the ultimate intention of erecting thereon a fuel gas plant.

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THE following are the terms of the veto recently sent into Councils by Mayor Hopkins in respect of the franchise recently granted to the projectors of the Mutual Electric Light and Power Company, of Chicago: "Gentlemen—I herewith return to you, without my approval, the ordinance passed at your meeting of March 12, 1894, granting the Mutual Electric Light and Power Company, of Chicago, the privilege of operating an electric light plant in a part of the city of Chicago. My objections to the ordinance are numerous and will fully appear from the amendments herewith submitted. It has been the almost universal rule in the past to make ordinances of this character merely permissive and to entirely omit even the semblance of a corresponding mandatory permission. In applying this test to the ordinance under consideration, I find that, while it permits, it singularly fails in requiring the Company to furnish to the public the facilities for which it seeks a license. I therefore suggest that the ordinance be so amended as to require the Company to construct and have ready for operation within one year from the passage of this ordinance a plant, the actual bona fide cost of which shall be not less than $40,000, and which shall have the capacity of furnishing electric light for not less than 350 arc lights, and that for a failure to comply with such requirement the Company should pay to the city of Chicago the sum of $10,000 as liquidated damages; and also that within five years its plant shall be so enlarged as to be able to furnish electric light at any place within the territory for which the privileges conferred by the ordinance are granted. To insure a faithful compliance with this requirement the Company should deposit with the City Treasurer $10,000 in cash or city bonds, which, however, should be returned to it after it shall have expended $40,000 upon its plant, have strung 20 miles of wire and laid not less than 2 miles of conduits, and shall have a minimum capacity of 350 arc lights. The ordinance as passed permits the Company to charge $7.50 per month for arc lights operated until midnight. I have reached the conclusion that the maximum charge for arc lights operated until 12:30 o'clock at night should be no more than $7, and for arc lights operated not later than 10:30 P. M., no more than $5.50 per month. I consider the privilege granted to this Company as of great pecuniary value, and would insist that after the expiration of 10 years the percentage of gross receipts to be paid to the city should be increased from 3 to 5 per cent. Another amendment submitted herewith is intended to guard against the absorption of this Company by a trust. The anti-trust clause submitted by me provides in substance that if, by any means or method whatsoever, the stock of the Company shall at any time be held, owned or controlled in such a way as to effect, practically or virtually, a consolidation or combination or trust arrangement of any kind of said Company with any other concern operating or controlling a like or similar plant, then the privileges granted by the ordinance should be entirely null and void. The ordinance permits the Company to erect poles in alleys and, where absolutely necessary, in the streets, also to lay conduits beneath the surface of streets and alleys. The number of poles and conduits should be kept within reasonable limits. I, therefore, propose that the Company be required to permit the use of its poles and conduits to such other Companies, to be designated by the City Council, as may in the future be licensed by the city, upon fair and equitable terms to be either agreed upon or else determined by arbitration. The ordinance when amended as proposed by me will receive my approval. The substance of the proposed amendments was communicated by me to representatives of the Company, and from their statements to me I am led to believe that the ordinance thus amended will be accepted by the Company. In its present form I am constrained to veto the ordinance."

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WHEN the veto was read Mr. Noble moved the adoption of the amendment recommended by the Mayor, which was agreed to.

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THE iron roof for the new car barn of the Colonial Electric Street Railway, of Kingston, N. Y., will be furnished by the Berlin Iron Bridge Company, of East Berlin, Conn.

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THE shipowners and steamboat men of Jacksonville, Fla., are agitating the subject of inducing the Lighthouse Board to cause the beacons on the St. John's river to be lighted by compressed gas—kerosene oil lamps are now used. The plan presents no obstacles in a practical way, for a well equipped Pintsch plant is now in operation in Jacksonville.

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AN echo of the famous gas hearing at New Bedford, Mass., which brought out the astonishing fact that gas made under the Beauharnais method was partly produced from "potato extract and dried corn cobs," is reported in the recent sale to private parties of the show plant that had been established by General Beauharnais and his associates on Taber's Wharf, New Bedford.

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MUCH complaint having been made of numerous gas escapes along the street lines of the Ottawa (Canada) Gas Company, Aldermen Greene and McGuire had an interview with Manager Coates, of the Gas Company, respecting what the Company proposed to do in attempting "to abate the nuisance." Mr. Coates informed the City Fathers that the Company had arranged to make the following repairs this spring: On Sussex street, from Rideau street to New Edinburgh, a new 6-inch pipe; Rideau street, from King street to Sappers' bridge, to remove the 6-inch main from the south side and put an 8-inch on north side; Sparks street, from Sappers' bridge to Bank street, to relay the 6-inch pipe on the north side; Elgin street, to relay the 6-inch from Sparks to McLaren street. A number of other minor repairs will be made. Manager Coates further said the Company was desirous of doing its repairs in harmony with the projects of the corporation and no friction will be caused.

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BOGUS gas inspectors having made trouble for the Delaware County Gas Company, of Chester, Pa., the inspectors of the Company are now provided with neat uniforms.

## The Market for Gas Securities.

Consolidated gas seems to have at last reached a point somewhat commensurate with its real value. The opening to-day (Friday), as against the closing figure of Thursday week (128½–129½), was 134½–135. Yesterday (March 29) 2,444 shares were dealt in on the Exchange, the range being 133½–135½. No doubt this sharp advance will bring out considerable stock on realizing account. Other city shares are strong, notably Equitable and Standard preferred.

Brooklyn stocks are strongly held, one of the firmest being Nassau, for which 160 is freely bid. We fail to discover any positive signs of progress in the matter of adjusting the differences in the Brooklyn situation, although it is again asserted with great positiveness that it is only a question of short time when the old Brooklyn works would be shut down. The Equity tangle is in decidedly intricate shape, and the various "financiers" connected therewith are pirouetting like newly-decapitated chickens. Consolidated of Baltimore shows a net gain of about 2½ points for the week, and we fail to see anything that will prevent it from reaching the 80 mark. Chicago gas is rather weak, having opened to-day at 62½–63. The movement in Consumers, of Jersey City, is rather prolonged this year, and 34 is bid for it. Some enthusiasts declare that a dividend of at least 1 per cent. per quarter is in sight, but we rather imagine the U. G. I.'s leasehold of the old Jersey City works has affected consumers more than anything else. The U. G. I. Company's quarterly dividend of 2 per cent. has been declared, payable on the 14th inst. At auction: $2,000 Detroit Gas Company's 5 per cent. consolidated bonds, at 65; 56 shares Brooklyn gas, at 109; 800 shares Citizens gas, of Brooklyn, at 60.

## Gas Stocks.

**Quotations by Geo. W. Close, Broker and Dealer in Gas Stocks,**

16 Wall St., New York City.

April 2.

☞ All communications will receive particular attention.
☞ The following quotations are based on the par value of $100 per share.

| | Capital. | Par. | Bid | Asked |
|---|---|---|---|---|
| Consolidated | $35,430,000 | 100 | 134½ | 135 |
| Central | 500,000 | 50 | 100 | — |
| " Scrip | 220,000 | — | 100 | — |
| Equitable | 4,000,000 | 100 | 182 | 184 |
| " Bonds | 1,000,000 | — | 106 | 108 |
| Harlem, Bonds | 170,000 | — | — | — |
| Metropolitan, Bonds | 658,000 | — | 108 | 112 |
| Mutual | 3,500,000 | 100 | 145 | 150 |
| " Bonds | 1,500,000 | — | 100 | 102 |
| Municipal, Bonds | 750,000 | | — | — |
| Northern | | 50 | 80 | 95 |
| " Bonds | 150,000 | — | — | 100 |
| Richmond Co., S. I. | 348,650 | 50 | 50 | — |
| " Bonds | 100,000 | — | — | — |
| Standard Gas Co— | | | | |
| Common Stock | 5,000,000 | 100 | — | 35 |
| Preferred | 5,000,000 | 100 | 75 | 80 |
| Yonkers | | 50 | 112 | — |
| Gas Co's of Brooklyn. | | | | |
| Brooklyn | 2,000,000 | 25 | 108 | 110 |
| Citizens | 1,200,000 | 20 | 58 | 65 |
| " S. F. Bonds | 320,000 | 1000 | — | 101 |
| Equity Gas Light Co | 2,000,000 | 100 | — | — |
| Bonds | 1,000,000 | — | — | — |
| Fulton Municipal | 3,000,000 | 100 | 138 | 140 |
| " Bonds | 300,000 | | 103 | — |
| Peoples | 1,000,000 | 10 | — | 80 |
| " Bonds (7's) | 368,000 | — | 100 | — |
| " " (6's) | 94,000 | — | 98 | 100 |
| Metropolitan | 870,000 | 100 | — | 140 |
| " Bonds (5's) | 70,000 | — | 100 | — |
| Nassau | 1,000,000 | 25 | 160 | — |
| " Otfs | 700,000 | 1000 | 99 | 100 |
| Williamsburgh | 1,000,000 | 50 | 145 | — |
| " Bonds | 1,000,000 | — | 107 | 110 |
| Out of Town Gas Companies. | | | | |
| Bay State Gas Co.— | | | | |
| Stock | 5,000,000 | 50 | 23 | 23½ |
| Income Bonds | 2,000,000 | 1000 | 60 | — |
| Boston United Gas Co.— | | | | |
| 1st Series S.F. Trust | 7,000,000 | 1000 | 78 | — |
| 2d " " " | 3,000,000 | 1000 | 57 | 58 |
| Buffalo Mutual, N. Y. | 750,000 | 100 | 121 | 125 |
| " Bonds | 200,000 | 1000 | 95 | 100 |
| Citizens, Newark | 1,000,000 | 50 | 155 | 160 |
| Chicago Gas Company. | 25,000,000 | 100 | 62½ | 63 |
| Chicago Gas Light. & Coke Co.— | | | | |
| G't'd Gold Bonds | 7,650,000 | 1000 | 81⅛ | 81½ |
| Consumers Gas Light Co., Jersey City | 2,000,000 | 100 | 34 | — |
| Bonds | 600,000 | 1000 | 84 | 90 |
| Cincinnati G. & C. Co. | 7,000,000 | 100 | 192 | — |
| Consumers Toronto | 1,600,000 | 50 | 184½ | 187 |
| Central, S. F., Cal | | | — | 100 |
| Capital, Sacramento, Cal | | | — | 55 |
| Consolidated, Balt. | 11,000,000 | 100 | 66⅛ | 66½ |
| " Bonds | 6,400,000 | | 107 | 107½ |
| Citizens Gas Lt. Co., Rochester, N. Y. | 500,000 | — | 85 | 101 |
| Bonds | 250,000 | | — | — |
| Detroit Gas Co.— | | | | |
| Con. Bonds | ..... | ..... | 65 | 70 |
| East River Gas Co., Long Island City | 1,000,000 | 100 | — | — |
| Bonds | 500,000 | 100 | 89¼ | — |
| Equitable Gas & Fuel Co, Chicago, Bonds | 2,000,000 | 1000 | — | 101 |
| Hartford, Conn | 750,000 | 25 | 120 | 128 |
| Jersey City | 750,000 | 20 | 190 | 200 |
| Louisville, Ky | 2,570,000 | 50 | 125 | 130 |
| Laclede Gas Light Co. St. Louis, Mo.— | | | | |
| Common Stock | 7,500,000 | 100 | 15½ | 16⅛ |
| Preferred " | 2,500,000 | 100 | 65 | 70 |
| Bonds | 9,034,400 | 1000 | 85⅛ | 86 |
| Little Falls N. Y. | 50,000 | 100 | — | 100 |
| " Bonds | 25,000 | — | 100 | 103 |
| Montreal, Canada | 2,000,000 | 100 | 200 | 208 |
| Memphis (Tenn.) Gas | 750,000 | 100 | 30 | — |
| " Bonds. | 240,000 | 100 | 103 | — |

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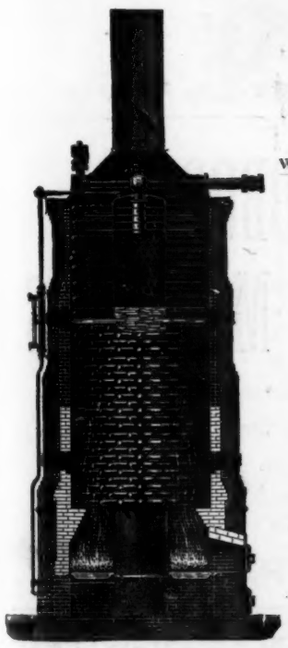

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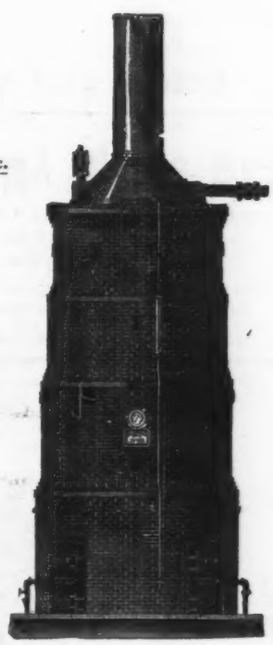

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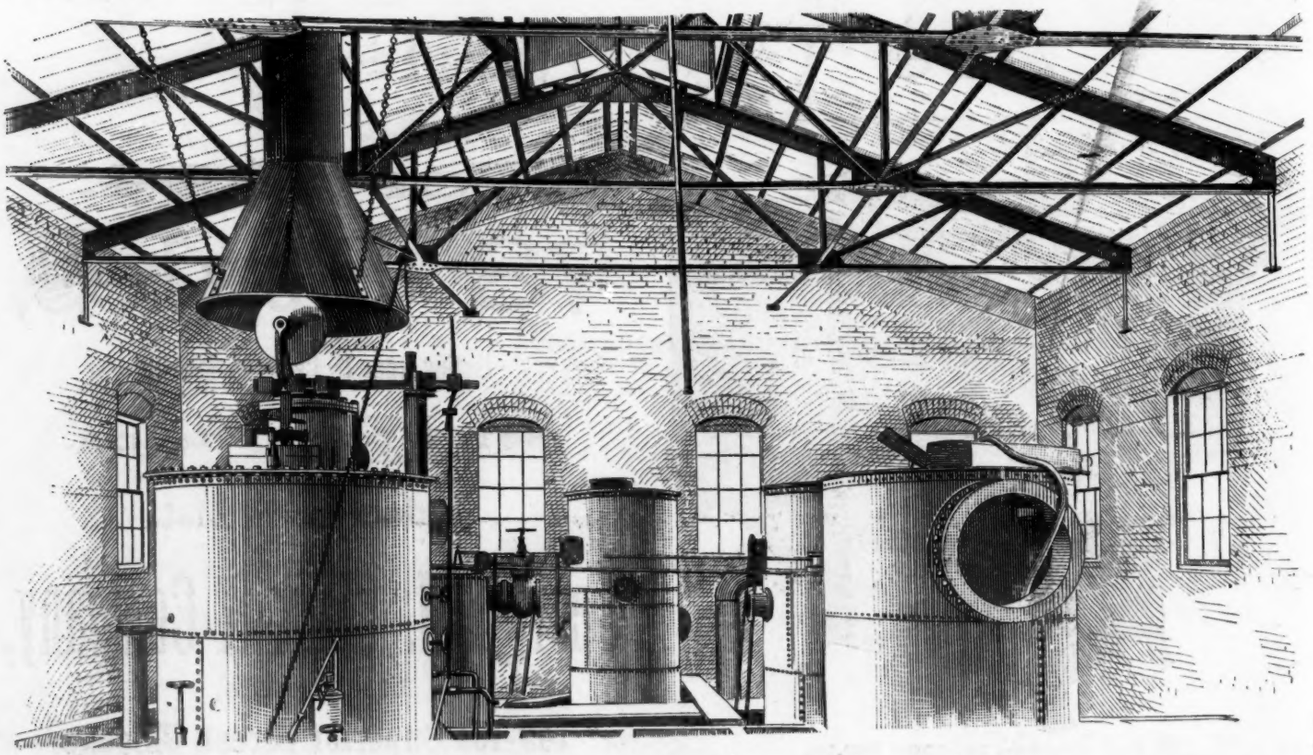

The above illustration is taken direct from a photograph, and shows the construction of an Iron Truss Roof designed and built by us for the Lynn Gas and Electric Company, at Lynn, Mass. The building is 37 feet in width by 64 feet in length, with brick side walls and an Iron Truss Roof covered with corrugated iron. A building of this kind cannot possibly take fire, as the interior appointments are such that there is little or no woodwork used about the construction of the plant, and no woodwork used about the side walls or roof.

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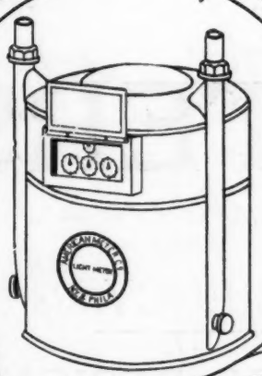

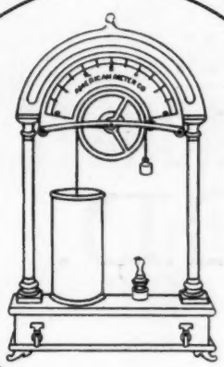

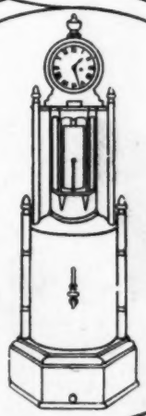

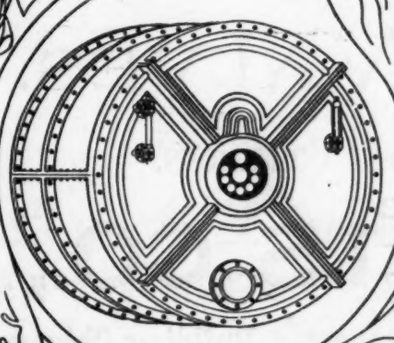

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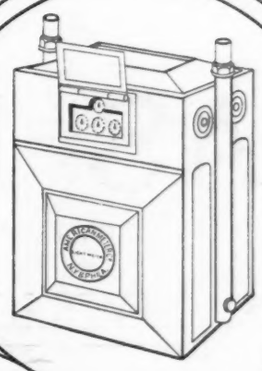
## PUBLIC LIGHTING TABLE.

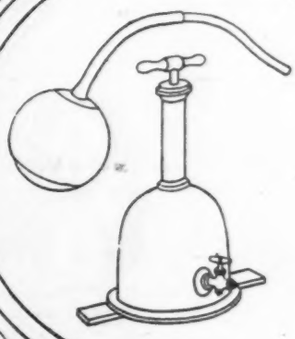
### APRIL, 1894.

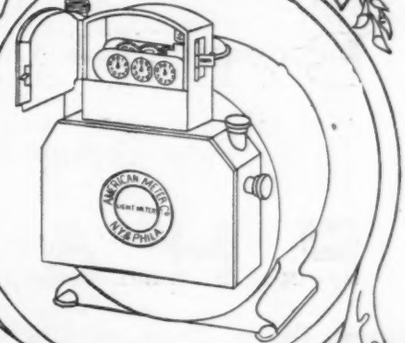
| Day of Week. | Date. | Table No. 1. Following the Moon. Light. | Extinguish. | Table No. 2. New York City. All Night Lighting. Light. | Extinguish. |
|---|---|---|---|---|---|
| | | | | P.M. | A.M. |
| Sun. | 1 | 6.50 PM | 4.40 AM | 6.10 | 4.55 |
| Mon. | 2 | 6.50 | 4.40 | 6.15 | 4.40 |
| Tue. | 3 | 7.00 | 4.40 | 6.15 | 4.40 |
| Wed. | 4 | 7.00 | 4.40 | 6.15 | 4.40 |
| Thu. | 5 | 7.00 NM | 4.40 | 6.15 | 4.40 |
| Fri. | 6 | 7.00 | 4.40 | 6.15 | 4.40 |
| Sat. | 7 | 7.00 | 4.30 | 6.15 | 4.40 |
| Sun. | 8 | 7.00 | 4.30 | 6.15 | 4.40 |
| Mon. | 9 | 7.00 | 4.30 | 6.25 | 4.30 |
| Tue. | 10 | 11.20 | 4.30 | 6.25 | 4.30 |
| Wed. | 11 | 12.20 AM | 4.30 | 6.25 | 4.30 |
| Thu. | 12 | 1.10 FQ | 4.30 | 6.25 | 4.30 |
| Fri. | 13 | 1.50 | 4.30 | 6.25 | 4.30 |
| Sat. | 14 | 2.20 | 4.20 | 6.25 | 4.30 |
| Sun. | 15 | 2.50 | 4.20 | 6.25 | 4.30 |
| Mon. | 16 | 3.10 | 4.20 | 6.30 | 4.20 |
| Tue. | 17 | 3.30 | 4.20 | 6.30 | 4.20 |
| Wed. | 18 | No L. | No L. | 6.30 | 4.20 |
| Thu. | 19 | No L. FM | No L. | 6.30 | 4.20 |
| Fri. | 20 | No L. | No L. | 6.30 | 4.20 |
| Sat. | 21 | 7.10 PM | 9.50 PM | 6.30 | 4.20 |
| Sun. | 22 | 7.10 | 10.50 | 6.30 | 4.20 |
| Mon. | 23 | 7.20 | 11.50 | 6.40 | 4.10 |
| Tue. | 24 | 7.20 | 12.50 AM | 6.40 | 4.10 |
| Wed. | 25 | 7.20 | 1.30 | 6.40 | 4.10 |
| Thu. | 26 | 7.20 | 2.20 | 6.40 | 4.10 |
| Fri. | 27 | 7.20 LQ | 2.50 | 6.40 | 4.10 |
| Sat. | 28 | 7.20 | 3.20 | 6.40 | 4.10 |
| Sun. | 29 | 7.20 | 3.40 | 6.40 | 4.10 |
| Mon. | 30 | 7.20 | 4.00 | 6.45 | 4.00 |

### TOTAL HOURS LIGHTING DURING 1894.

| By Table No. 1. | Hrs. Min. | By Table No. 2. | Hrs. Min. |
|---|---|---|---|
| January | 244.10 | January | 423.20 |
| February | 195.30 | February | 355.25 |
| March | 206.20 | March | 355.35 |
| April | 169.40 | April | 298.50 |
| May | 162.10 | May | 264.50 |
| June | 135.40 | June | 234.25 |
| July | 146.30 | July | 243.45 |
| August | 162.20 | August | 280.25 |
| September | 174.10 | September | 321.15 |
| October | 211.20 | October | 374.30 |
| November | 221.00 | November | 401.40 |
| December | 245.30 | December | 433.45 |
| Total | 2274.20 | Total | 3987.45 |







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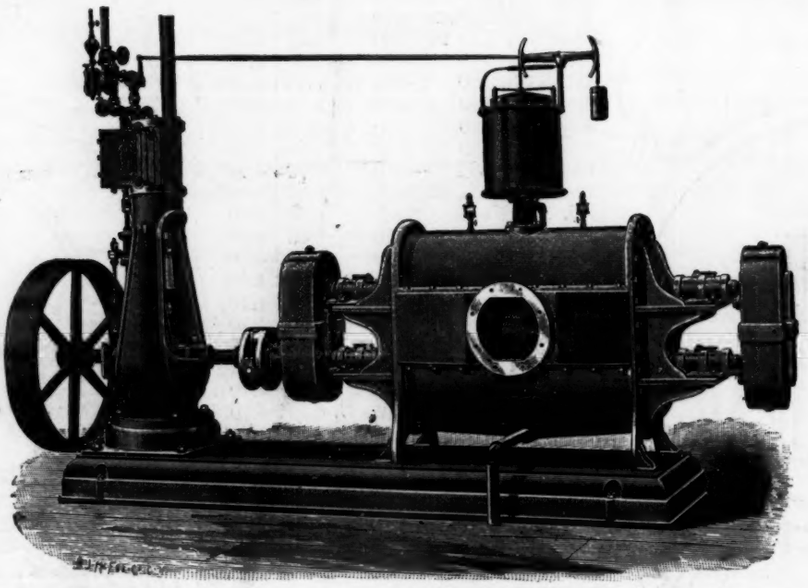

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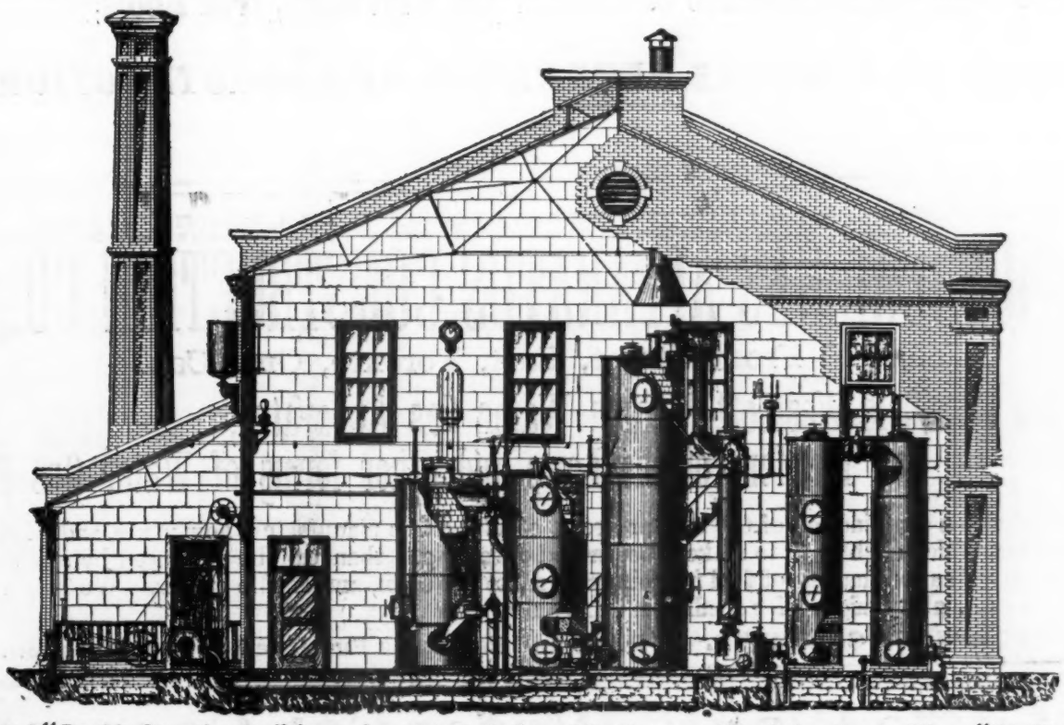

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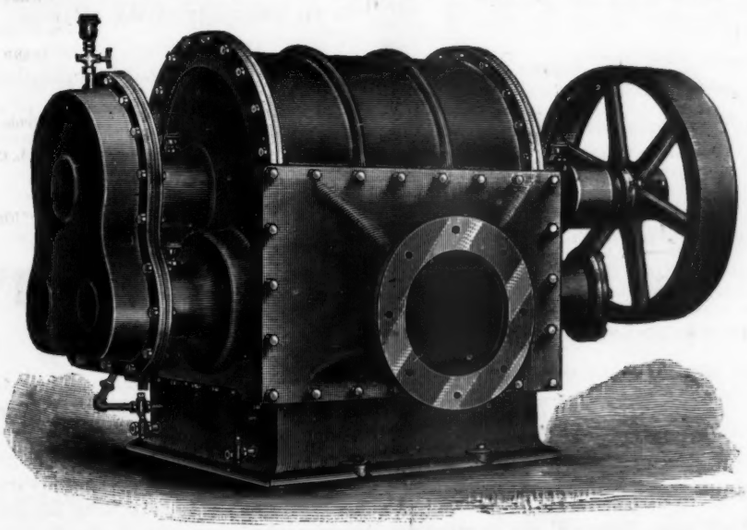

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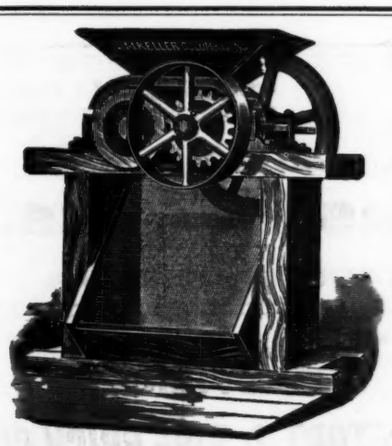

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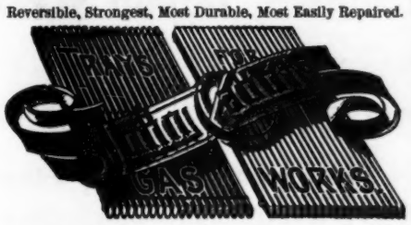


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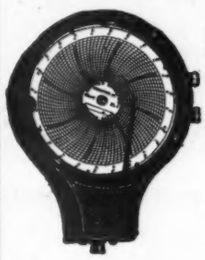

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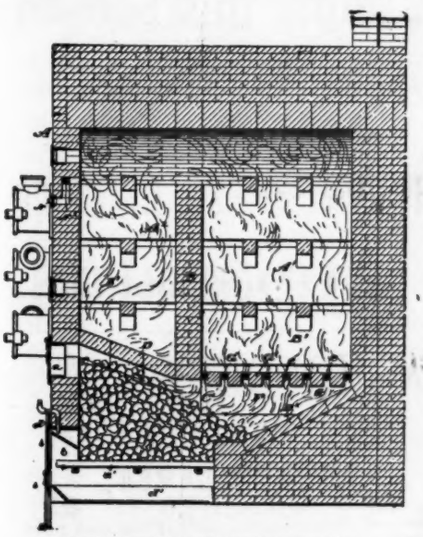

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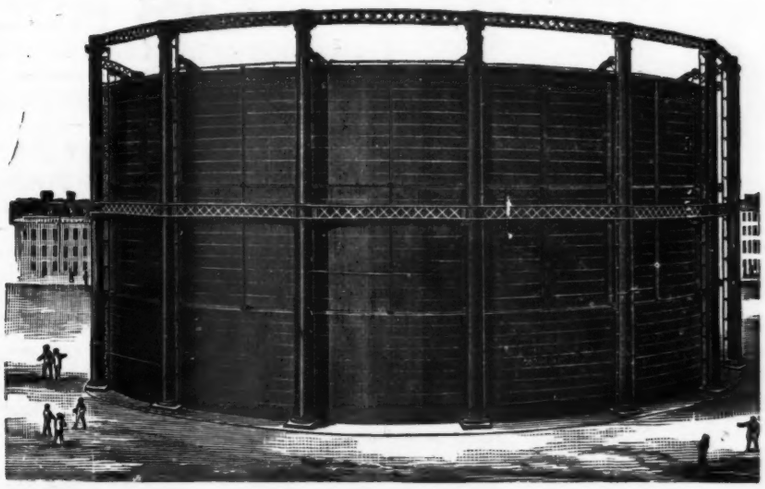

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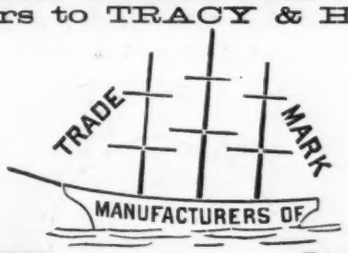


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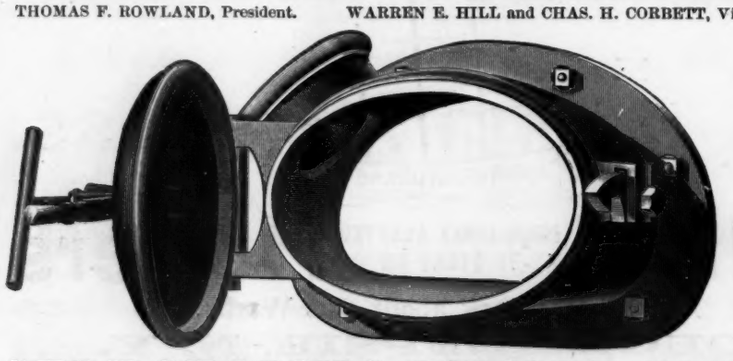

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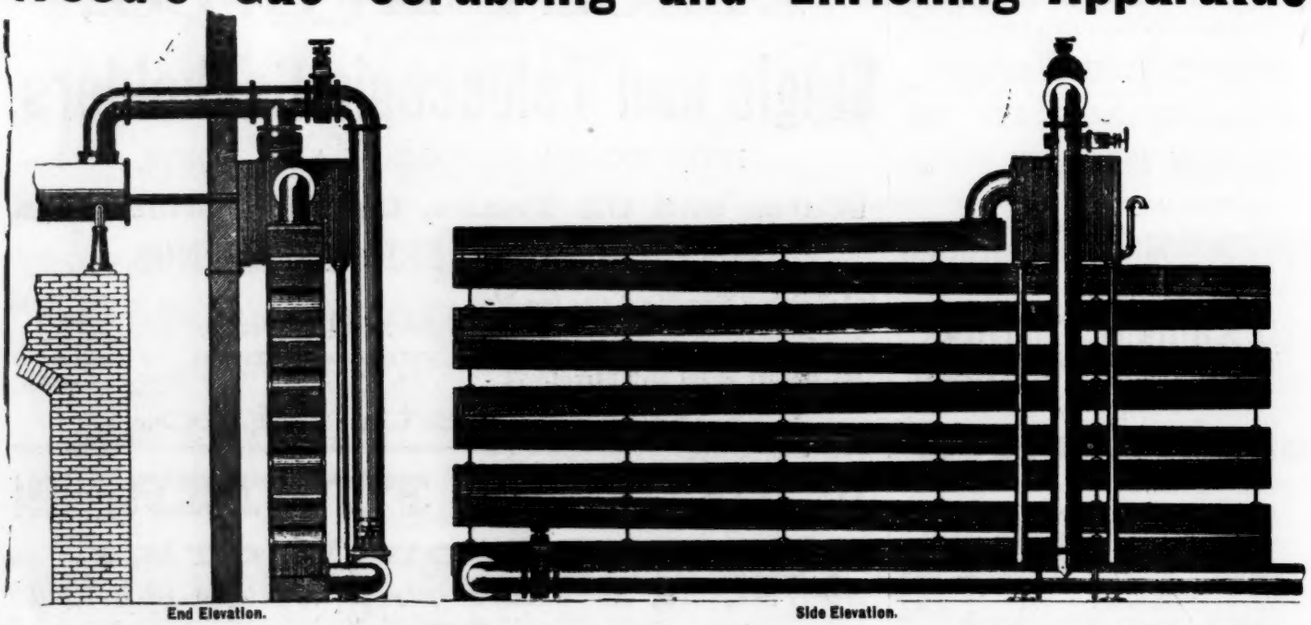

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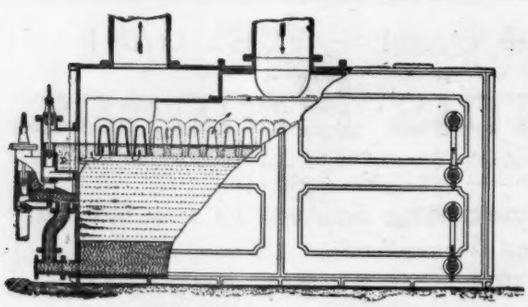

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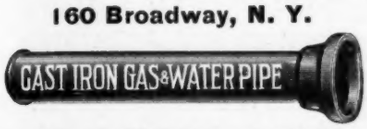


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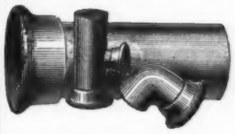

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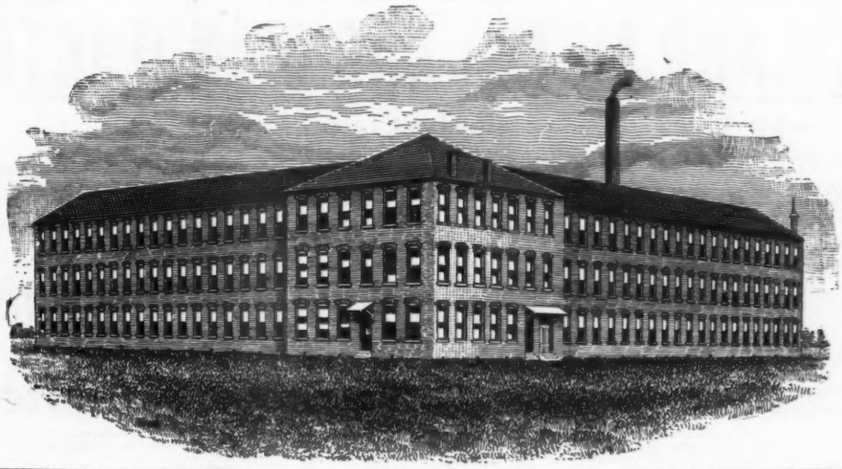

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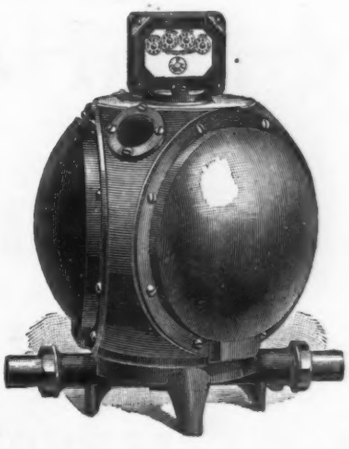

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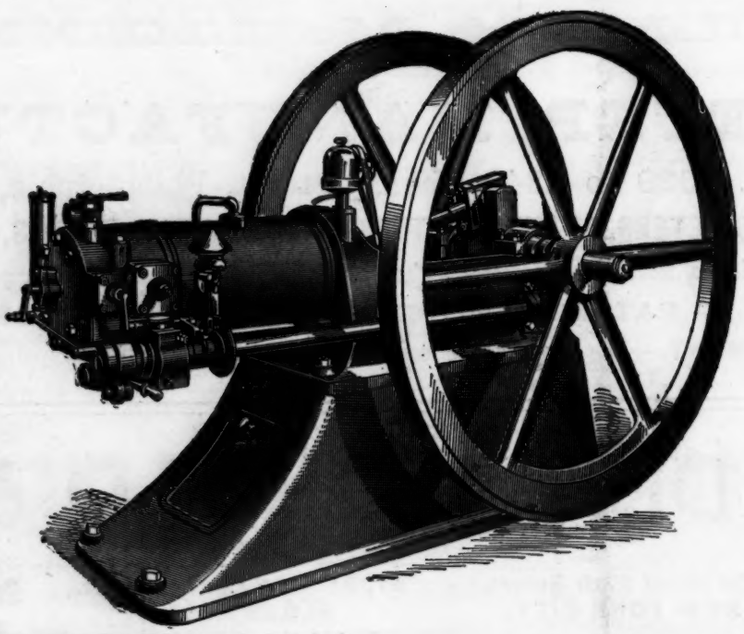

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